

STUDENT ID #: A42772981; GROUP #: 1

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

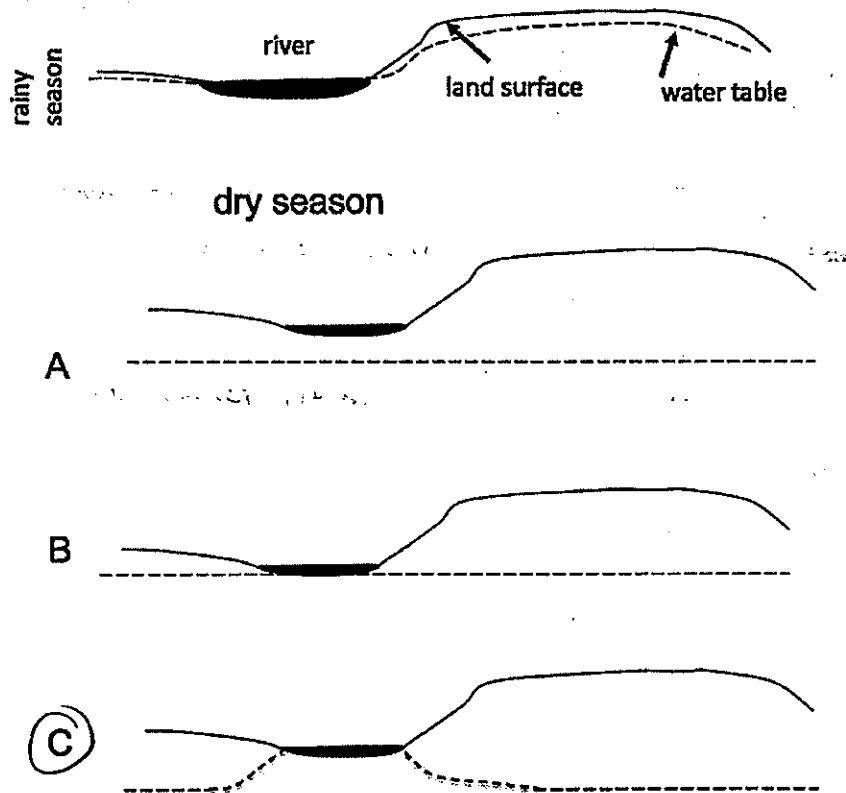
1. What happens when water molecules condense?
a. Water molecules become larger
b. Gaseous water becomes liquid water
c. Hydrogen and oxygen atoms combine to form liquid water
☒ d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
☒ a. The atmosphere
b. Oceans
c. Glaciers
d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
☒ a. Rainfall and surface runoff into the lake
b. Seasonal high water from the Mississippi River
c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of ____A____, then becomes water in a glacier through the process of ____B____, and then becomes water in clouds through the process of ____C____.
☒ a. A= evaporation, B= deposition, C= sublimation
b. A = condensation, B= precipitation, C= evaporation
c. A= sublimation, B= precipitation, C= evaporation
d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
☒ a. Liquid water from the pot condenses
b. Liquid water from the pot evaporates
c. Water vapor from the pot condenses
d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
☒ a. This is what one would predict with global warming
b. This is the opposite of what one would predict with global warming
c. Predictions about global warming do not address global precipitation.

With warmer weather comes more precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
b. A = gravitational, B= gravitational, C= thermal
c. A = gravitational, B= thermal, C= thermal
d. A= thermal, B= thermal, C= thermal

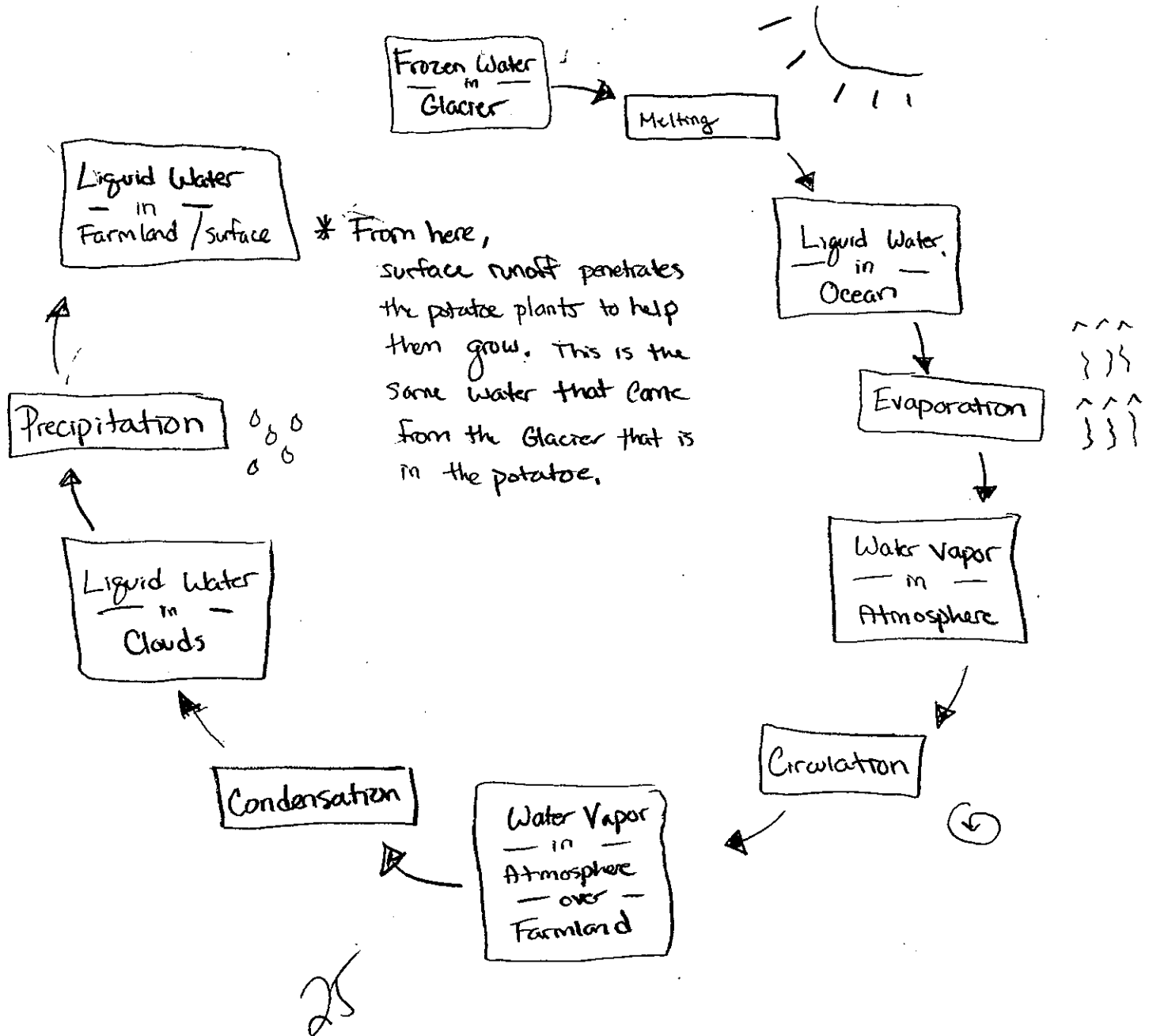
8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
b. been less
c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
b. Plants convert energy into biomass
c. Plants release energy

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- Water phase at each step in the journey
 - A name for each process that moves or transforms water



2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- a. Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - b. The energy that is causing movement or transformation of water.

Thermohaline

Circulation in oceans is caused by the wind pushing the water as well as differences in density between warm water and cold water. The water on the surface is heated by the sun. Then, the warm water is less dense and sinks while being replaced by more cold water from below.

If polar ice contained more salt than the surrounding water, this would then mean that the ice is more dense than the water around it. I do not believe that this change in salinated ice would directly affect circulation in oceans because as the water from other regions made its way to the polar regions, it would bring more salt and thus, resalinating the water around the ice. Circulation is a constant process and I do not believe it would be affected if polar ice contained more salt.

10

EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- a. They both destroy matter during energy conversion
- b. They both convert thermal energy into gravitational energy
- ☒ c. They both convert chemical energy into thermal energy
- d. They both convert kinetic energy into potential energy.

30 37

YOUR SCORE:

67

STUDENT ID #: A40175820; GROUP #: 1A

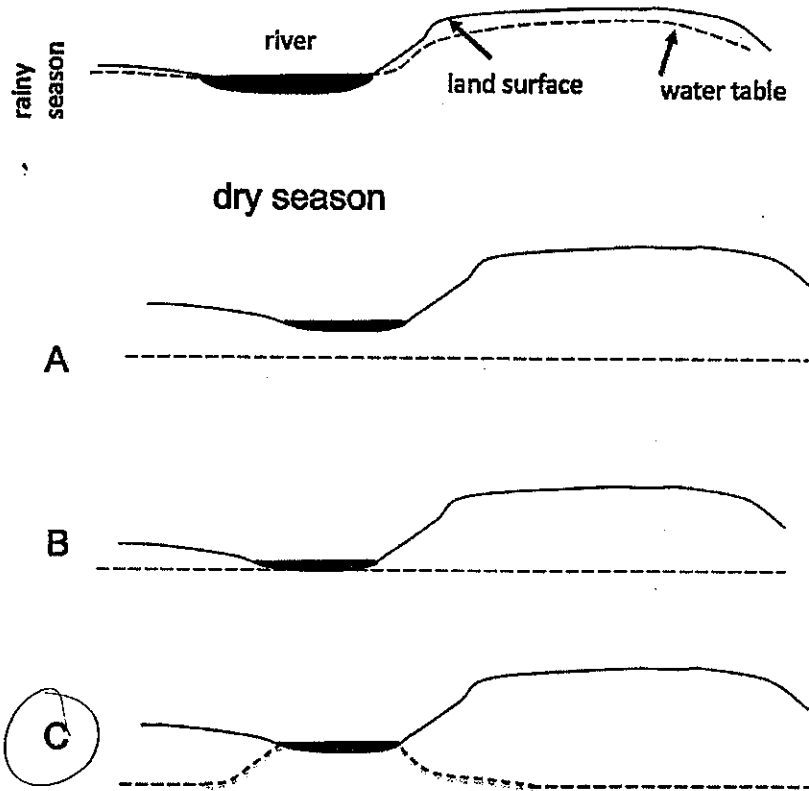
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a. Water molecules become larger
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c. Hydrogen and oxygen atoms combine to form liquid water
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2. Which of the following is the largest freshwater reservoir
a. The atmosphere
b. Oceans
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3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
☒ a. Rainfall and surface runoff into the lake
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☒ c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
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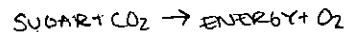
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- ☒ c. remained the same



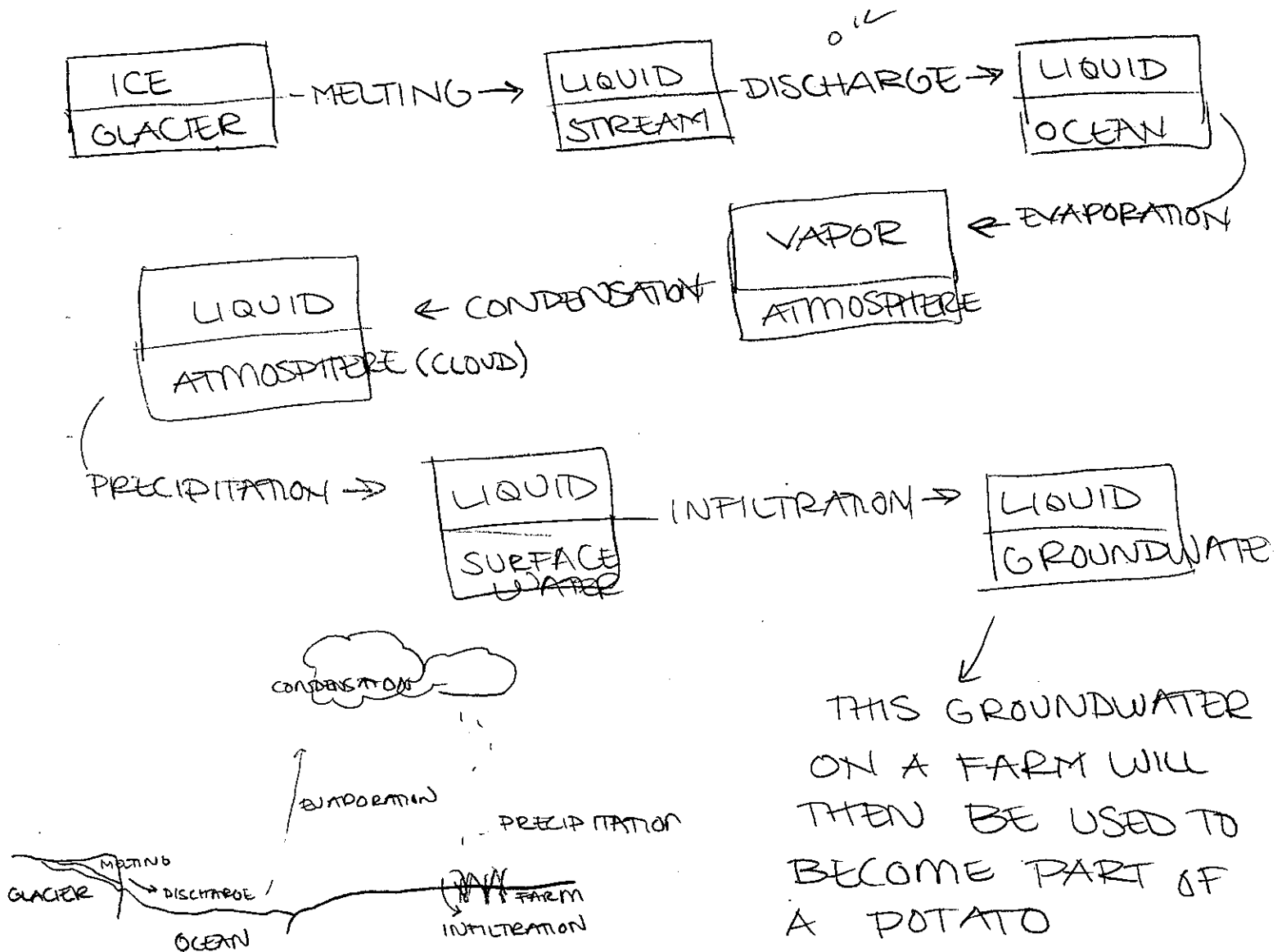
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- b. Plants convert energy into biomass
- c. Plants release energy

A40175820

SHORT ANSWER. 25 points each (50 points total)

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- Water phase at each step in the journey
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25

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
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IF POLAR ICE CONTAINED MORE SALT, THERMOHALINE CIRCULATION WOULD CHANGE. COMPOSITION AND BUOYANCY ARE LARGE FACTORS IN OCEAN CIRCULATION. USUALLY WARM LESS DENSE WATER RISES TO THE TOP AND ALSO SALT MAKES THINGS MORE DENSE AND THESE TWO THINGS CAUSE OCEAN CIRCULATION. THE POLAR ICE WOULD BECOME MORE DENSE WITH ALL THE SALT IT CONTAINED. WITH SO MUCH ICE + SALT, THE OVERALL TEMPERATURE OF THE OCEAN COULD DROP TOO BECAUSE OF ALL THE ICE THAT WOULD MELT. THIS OVERALL COOLING + SALT WOULD SLOW DOWN CIRCULATION.

WARM WATER
OCEAN CIRCULATION
↓ COOLING WATER

SALT WATER
MEANS NO FRESH WATER
FRESH WATER
SALT WATER

2 EXTRA CREDIT (2 points) PROCESSES.
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- d. They both convert kinetic energy into potential energy.

45 37

YOUR SCORE:

82

STUDENT ID #: A91919545; GROUP #: 1

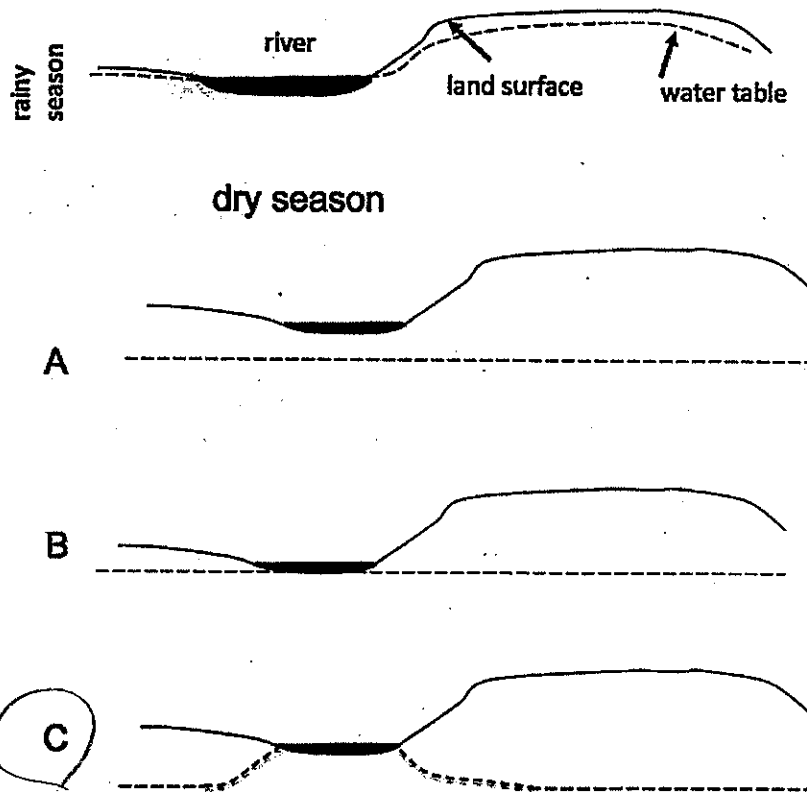
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7. Fill in the blanks. Water on the ground becomes water in the soil as a result of A energy. Water in the atmosphere becomes water in clouds as a result of B energy. Water in clouds becomes water in the atmosphere as the result of C energy.

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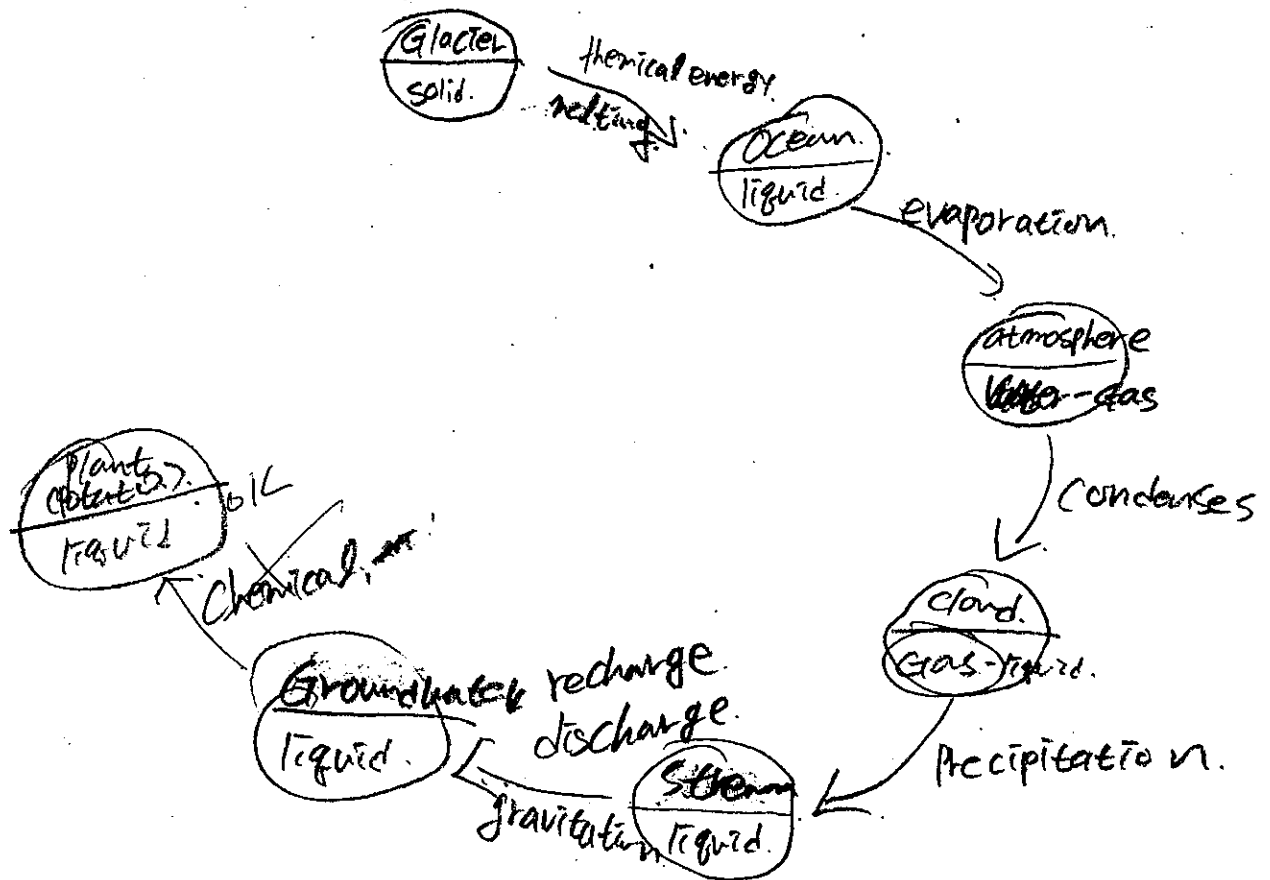
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- ☒ a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

A71919545

SHORT ANSWER. 25 points each (50 points total)

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First of all Energy needs to break something out bond something. Every materials are ~~the~~ shaking ~~that~~ for example, water molecules are also shaking but ice's molecules we cannot shake well because they are stick together. And sea water have many different factors ~~so~~ that's why sea water density is more then freshwater.

However, if polar ice contained more salt than the surrounding sea water from which it freezes. All of glacier will be sinked ~~to~~ into the seawater because ice's density is ~~getting~~ higher than sea water. Sea water level will ~~to~~ goes up.



Ice.

x -> salt

5

EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
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- They both convert kinetic energy into potential energy.

40 28

YOUR SCORE:

68

STUDENT ID #: A1986100; GROUP #: 1-A

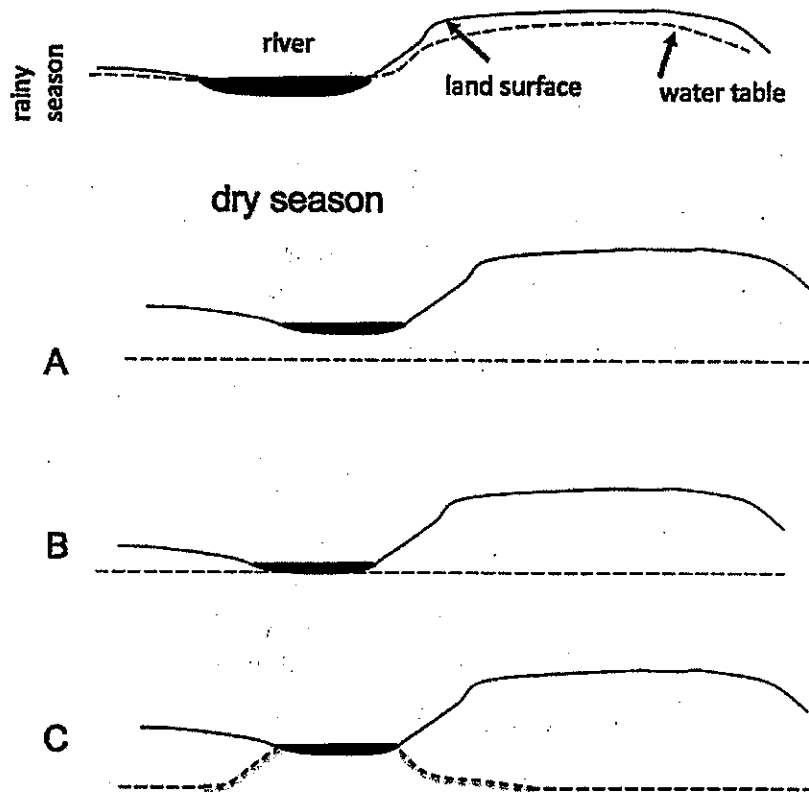
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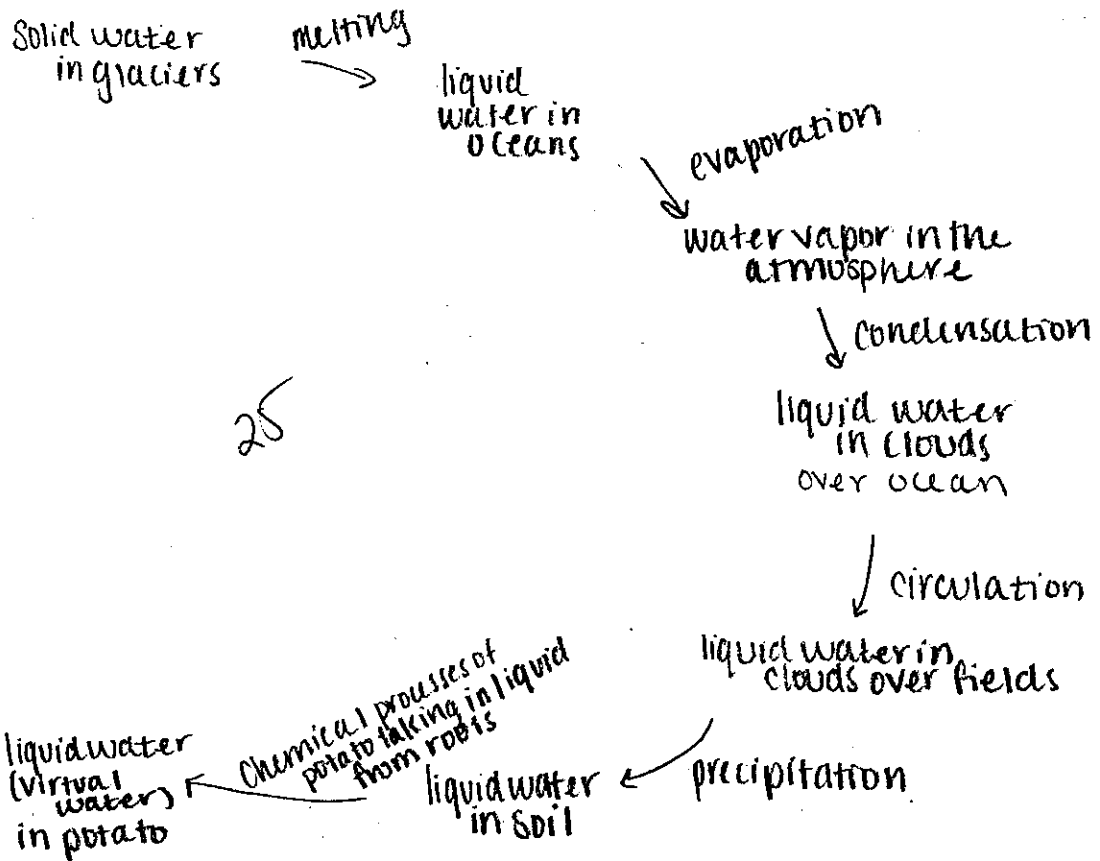
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SHORT ANSWER. 25 points each (50 points total)

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As the water begins in solid form in the glacier it then melts into liquid in the oceans, that liquid then evaporates into water vapor in the atmosphere which will then condense into liquid to form clouds. Precipitation will then occur causing the liquid water in the clouds to fall to Earth's surface and infiltrate into the soil. The water in the soil will then be absorbed by the plant and into the potato by a series of chemical processes.

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
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The driving forces behind thermohaline currents are temperature and salinity. The warm water at the surface that has been heated by thermal energy from the sun is cooled by the wind that blows across it, also causing evaporation to occur at the same time which increases the salinity of the water near the surface. This cooler, denser water with a higher salinity (also causing the water to be denser) then sinks, displacing cooler waters towards the bottom of the ocean to be forced upward and heated.

15 If polar ice contained more salt than the surrounding seawater the process of thermohaline circulation would decrease. Because the salt content of the surface water that is being evaporated is decreased, this takes away a huge factor in the thermohaline circulation itself – that being salinity. Without the increased density of surface water with a higher salinity, the sinking of water masses would rely solely on the cooling of water by wind currents causing this process to slow and decrease in general.

EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
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- They both convert kinetic energy into potential energy.

40 42

YOUR SCORE:

82

STUDENT ID #: 38181168; GROUP #: 2

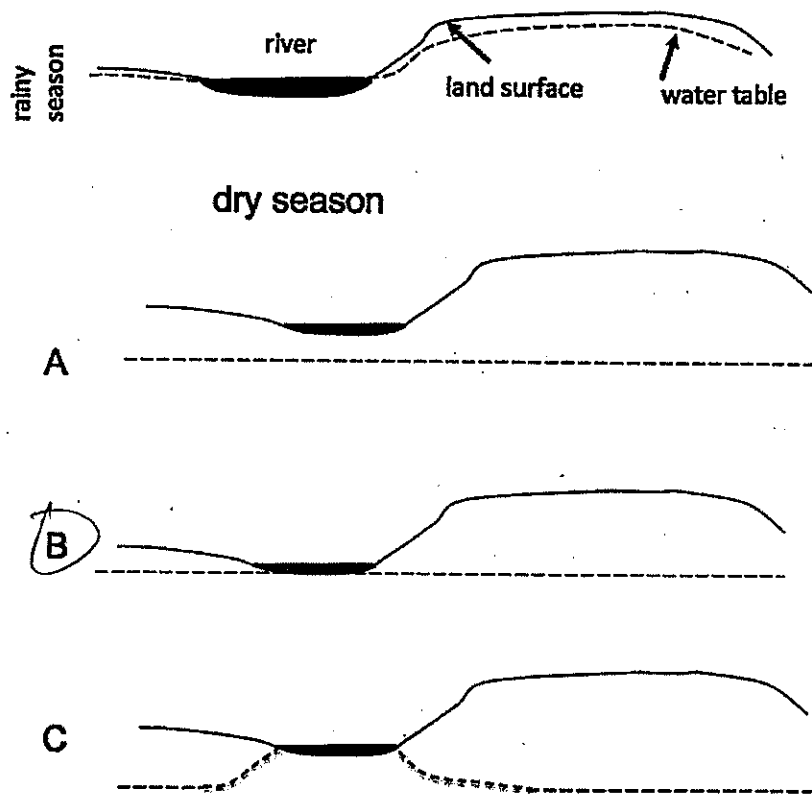
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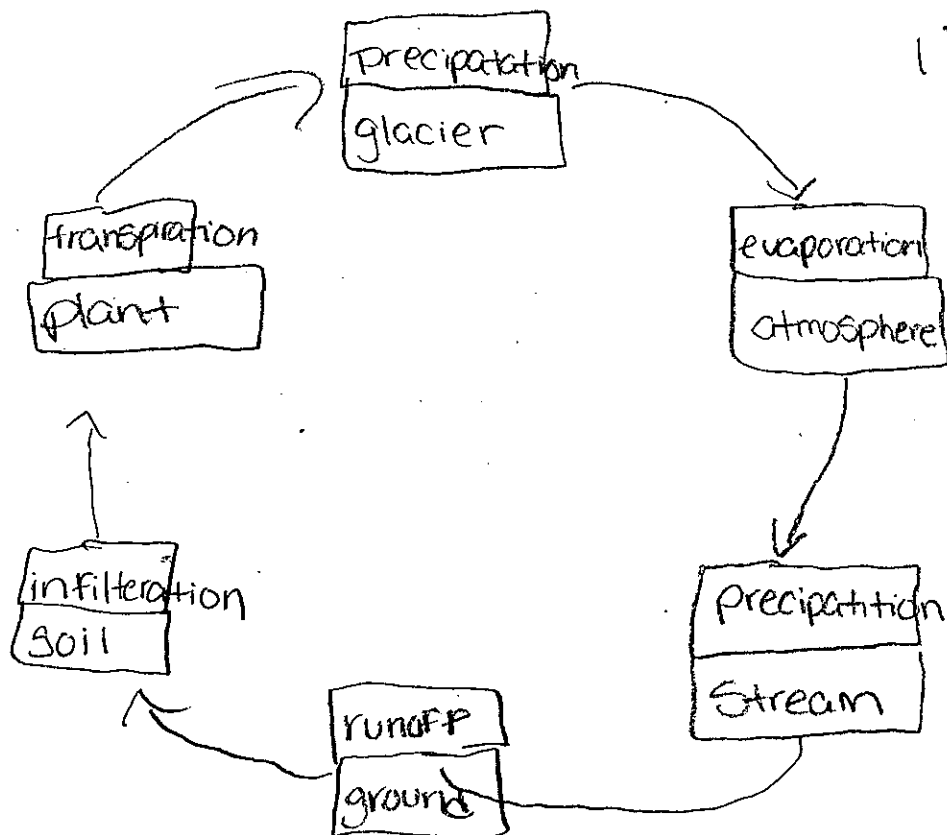
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A381168

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As a molecule falls from the sky during precipitation onto a glacier. As it starts to get a little warmer, the molecule is evaporate into the air where it becomes part of the clouds. As it precipitate down into a stream, which will runoff into a garden. During infiltration, the water is absorbed into the soil. The ground water goes to the potato through its roots through transpiration



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Thermohaline circulation is a process in which the oceans move many ^{warmer} currents to colder regions this is due to the density change between the cold and warm water. The energy that moves the water is called gravitational energy. If the water contains more salt it would force more of the colder water to the top making waters colder than normal.

15

τ?

EXTRA CREDIT (2 points)

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25 30

YOUR SCORE:

55

STUDENT ID #: A 43481863; GROUP #: 2

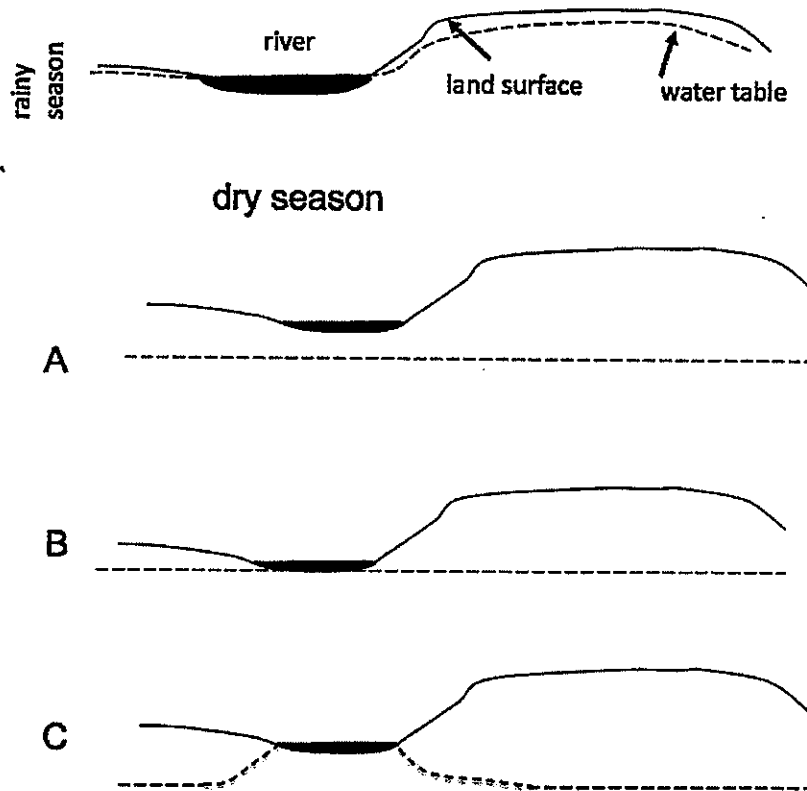
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- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



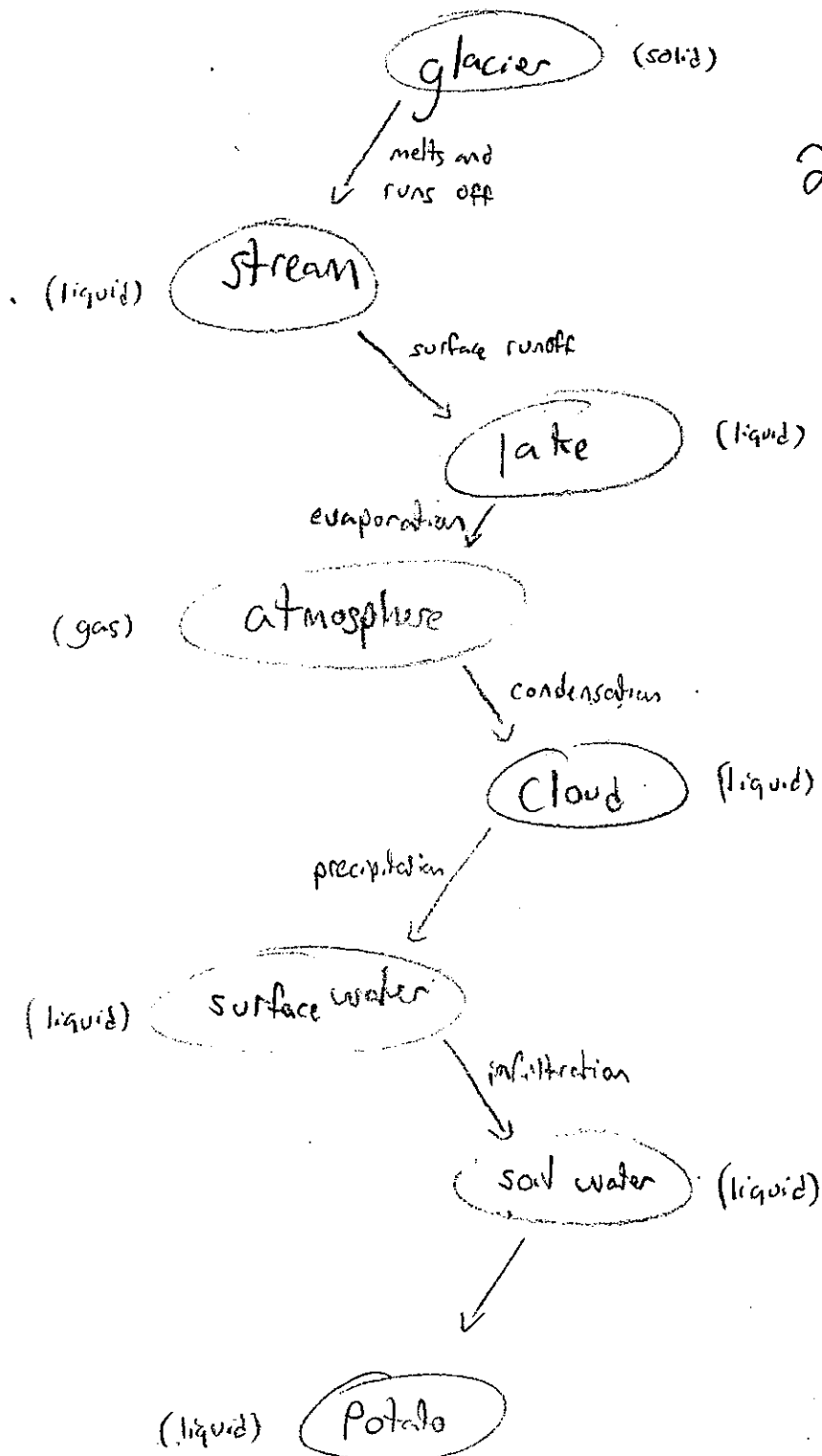
9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

A43481863

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water



2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - The energy that is causing movement or transformation of water.

In thermohaline circulation, water that is cold and/or salty sinks where water that is warm and/or less salty rises. Salt makes it more difficult for water to freeze, so the idea that polar ice would contain more salt than the surrounding sea water makes no sense. If it were the case, however, it would be much easier for the polar ice to melt.

5

EXTRA CREDIT (2 points)

- EC. How are burning wood and respiration similar?
- They both destroy matter during energy conversion
 - They both convert thermal energy into gravitational energy
 - They both convert chemical energy into thermal energy
 - They both convert kinetic energy into potential energy.

40 30

YOUR SCORE:

70

STUDENT ID #: 092087601; GROUP #: 2

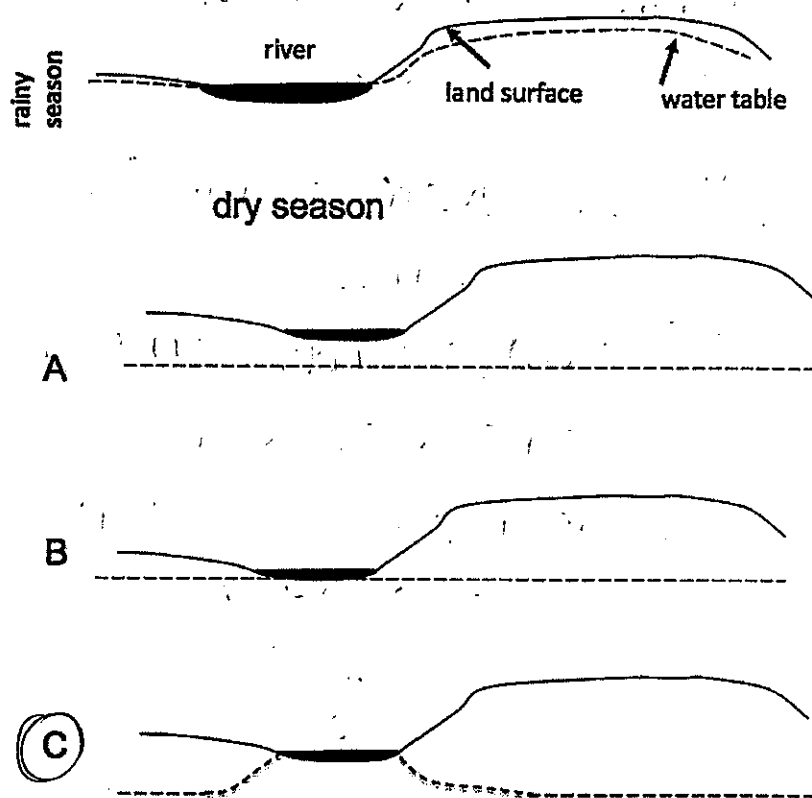
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

- 10
1. What happens when water molecules condense?
a. Water molecules become larger
☒ b. Gaseous water becomes liquid water
c. Hydrogen and oxygen atoms combine to form liquid water
d. The temperature of water molecules decreases
 2. Which of the following is the largest freshwater reservoir
a. The atmosphere
b. Oceans
☒ c. Glaciers
d. Lakes and streams
 3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
a. Rainfall and surface runoff into the lake
b. Seasonal high water from the Mississippi River
☒ c. Ground water from beneath the surface
 4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of ____A____, then becomes water in a glacier through the process of ____B____, and then becomes water in clouds through the process of ____C____.
a. A= evaporation, B= deposition, C= sublimation
☒ b. A = condensation, B= precipitation, C= evaporation
c. A= sublimation, B= precipitation, C= evaporation
d. A = precipitation, B= freezing, C= condensation
 5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
a. Liquid water from the pot condenses
b. Liquid water from the pot evaporates
☒ c. Water vapor from the pot condenses
d. Water vapor from the pot evaporates
 6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
☒ a. This is what one would predict with global warming
b. This is the opposite of what one would predict with global warming
c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- ☒ c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- ☒ a. been greater
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - ☒ c. Plants release energy

A42087601

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water

water in glacier



vapor in atmosphere

22.

(~~evaporates~~) sublimate



liquid water in clouds

(condenses)

↓ liquid water on ground

(precipitation)

↓ liquid water in potato
(recharge)

Potato soaks up rainfall in order
to help it grow.

2. When ice forms from seawater, the ice contains less salt than the remaining water.

Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

Circulation occurs because the different densities, along with wind and currents. Warmer water will go to the top (less dense) while colder water wants to sink (more dense) because of the gravitational energy. The water keeps moving. Polar ice containing more salt would float because it is less dense but ice already floats because it is less dense than liquid water so there wouldn't be a change.

2

EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

50 24

YOUR SCORE:

74

STUDENT ID #: A40741960; GROUP #: 2

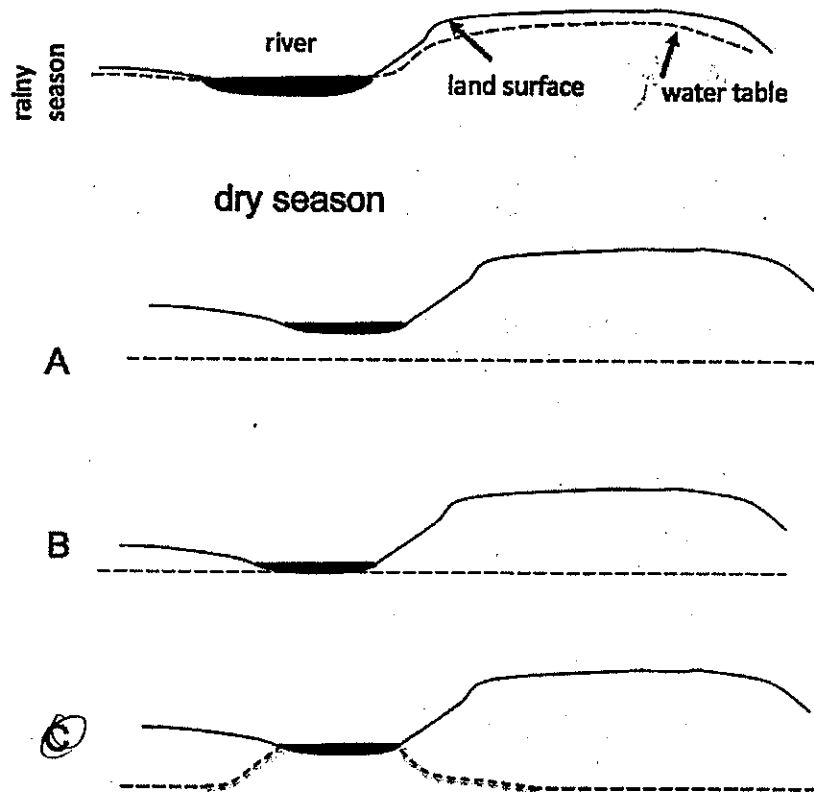
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?
a. Water molecules become larger
☒ b. Gaseous water becomes liquid water
c. Hydrogen and oxygen atoms combine to form liquid water
d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
a. The atmosphere
b. Oceans
☒ c. Glaciers
d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
a. Rainfall and surface runoff into the lake
b. Seasonal high water from the Mississippi River
☒ c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
a. A= evaporation, B= deposition, C= sublimation
☒ b. A = condensation, B= precipitation, C= evaporation
c. A= sublimation, B= precipitation, C= evaporation
d. A = precipitation, B= freezing, C= condensation
- * 5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
a. Liquid water from the pot condenses
☒ b. Liquid water from the pot evaporates
c. Water vapor from the pot condenses
d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
☒ a. This is what one would predict with global warming
b. This is the opposite of what one would predict with global warming
c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of GRAV A energy. Water in the atmosphere becomes water in clouds as a result of ther B energy. Water in clouds becomes water in the atmosphere as the result of ther C energy.

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- ☒ c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?

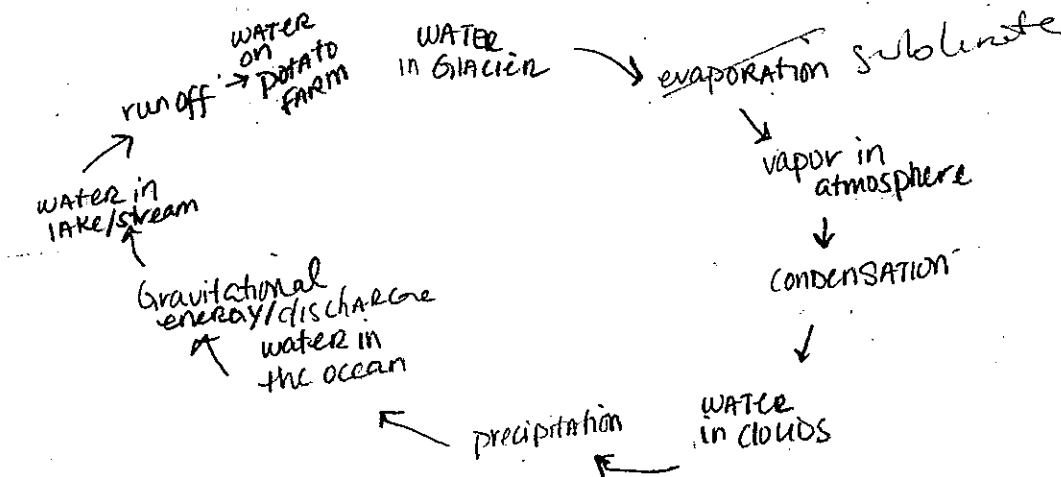


9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 - ☒ b. been less
 - c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - ☒ c. Plants release energy

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

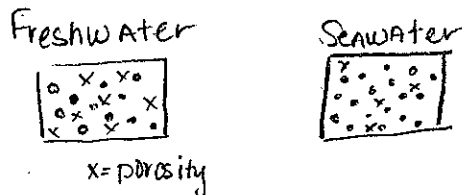
- Water phase at each step in the journey
- A name for each process that moves or transforms water



2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - The energy that is causing movement or transformation of water.

If polar ice contained more salt than the surrounding seawater thermohaline circulation would be increased. Seawater naturally contains more salt than there is in freshwater reservoirs such as glaciers. Thermohaline circulation happens because the water molecules that interact with the salt does not allow as much space for the salt to linger. As the water circulates and heats up, more of the freshwater evaporates than the saltwater. If polar ice contained more salt it would be easier for the water to evaporate because of the increased temperature of the water body.

5



EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

45 29

YOUR SCORE:

74

STUDENT ID #: 143206779; GROUP #: 3

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 8
a. Water molecules become larger
b. Gaseous water becomes liquid water
c. Hydrogen and oxygen atoms combine to form liquid water
d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
a. The atmosphere
b. Oceans
c. Glaciers
d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
a. Rainfall and surface runoff into the lake
b. Seasonal high water from the Mississippi River
c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of ____ A ____, then becomes water in a glacier through the process of ____ B ____, and then becomes water in clouds through the process of ____ C ____.
a. A= evaporation, B= deposition, C= sublimation
b. A = condensation, B= precipitation, C= evaporation
c. A= sublimation, B= precipitation, C= evaporation
d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
a. Liquid water from the pot condenses
b. Liquid water from the pot evaporates
c. Water vapor from the pot condenses
d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
a. This is what one would predict with global warming
b. This is the opposite of what one would predict with global warming
c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

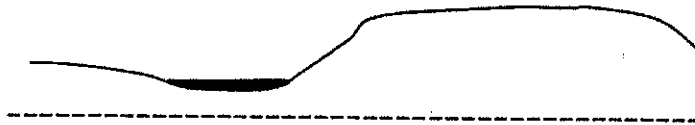
- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?

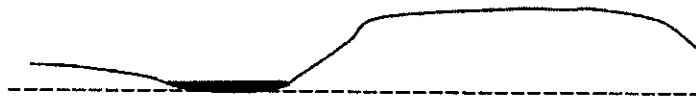


dry season

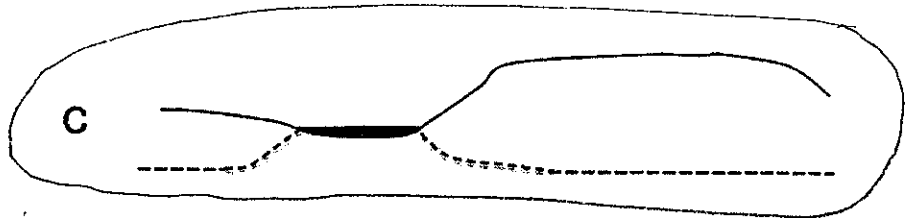
A



B



C



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:

- a. been greater
- b. been less
- c. remained the same

10. What happens when plants respire?

- a. Plants convert biomass into energy
- b. Plants convert energy into biomass
- c. Plants release energy

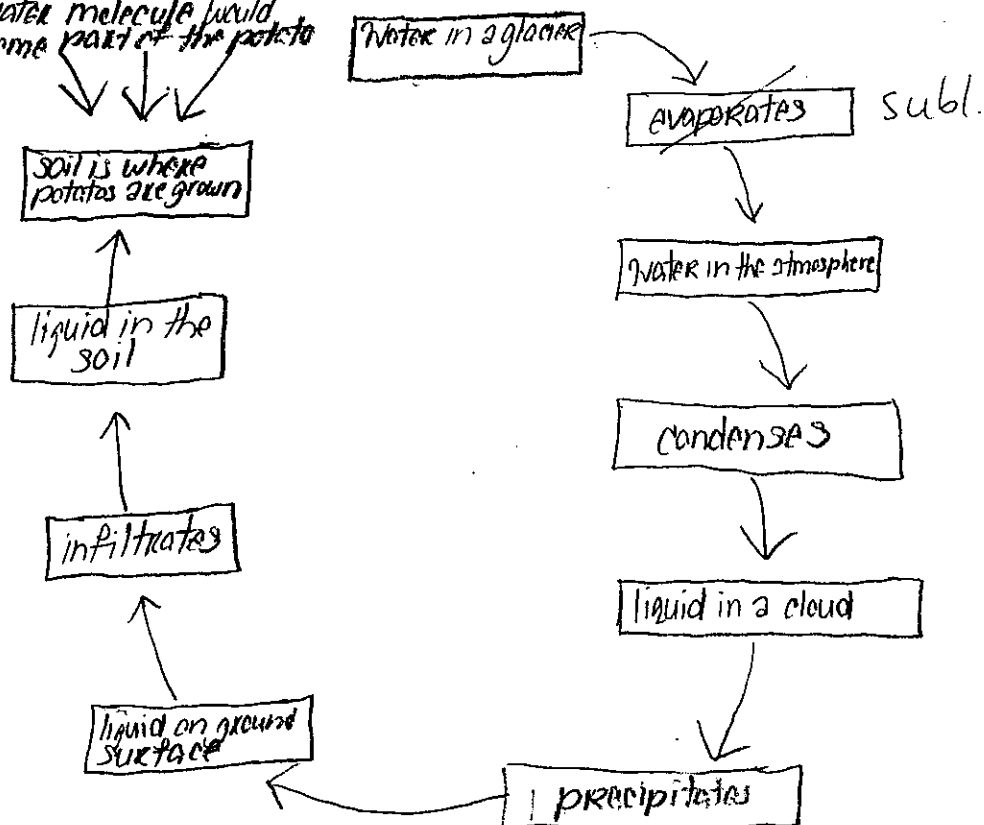
A43206773

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water

The water molecule would now become part of the potato



22

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

If polar ice contained more salt than the surrounding seawater from which it freezes, this could cause the thermohaline circulation process to slow down. Thermohaline circulation depends on the cold Arctic regions. Polar waters are already very salty and cold, so if the ice contained more salt than the polar waters, the ice would become more dense due to its mass being greater. Solar energy causes the movement and transformation of water because all energy derives from the sun. If the ice melted, this would increase the salt content of the water substantially. Wind drives water currents, so if the surrounding water contained even more salt than it already has, thermohaline circulation would slow down due to the wind circulating the water at a slower rate. Part of this would be because the water would have different densities between water masses due to the salt content.

20

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

40 44

YOUR SCORE:

84

STUDENT ID #: AB9527805; GROUP #: 3

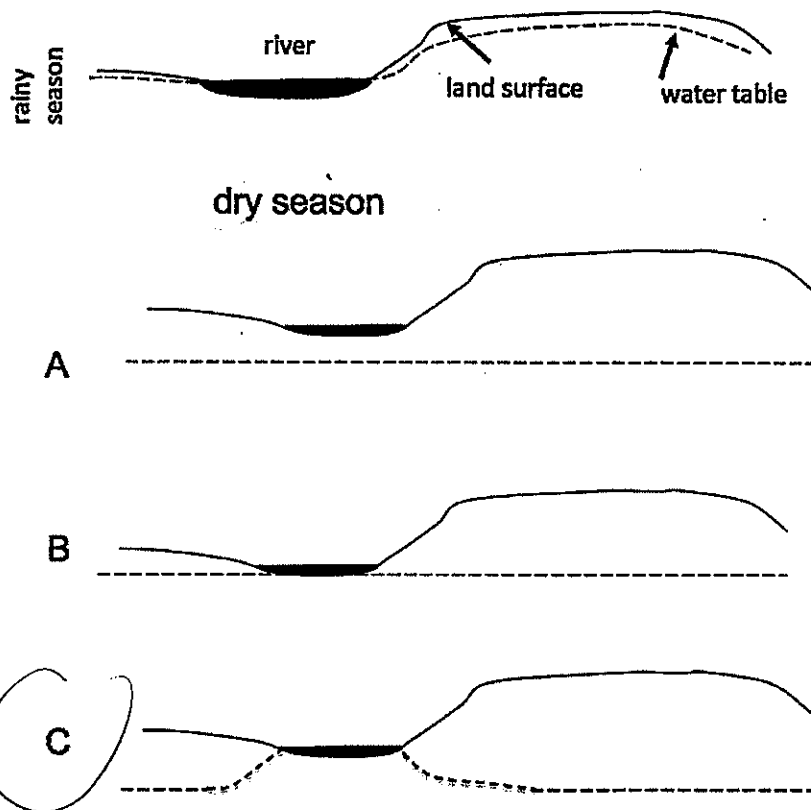
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

- 10
1. What happens when water molecules condense?
a. Water molecules become larger
b. Gaseous water becomes liquid water
c. Hydrogen and oxygen atoms combine to form liquid water
d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
a. The atmosphere
b. Oceans
c. Glaciers
d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
a. Rainfall and surface runoff into the lake
b. Seasonal high water from the Mississippi River
c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
a. A= evaporation, B= deposition, C= sublimation
b. A = condensation, B= precipitation, C= evaporation
c. A= sublimation, B= precipitation, C= evaporation
d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
a. Liquid water from the pot condenses
b. Liquid water from the pot evaporates
c. Water vapor from the pot condenses
d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
a. This is what one would predict with global warming
b. This is the opposite of what one would predict with global warming
c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

a. A= chemical, B= thermal, C= thermal
b. A = gravitational, B= gravitational, C= thermal
c. A = gravitational, B= thermal, C= thermal
d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?

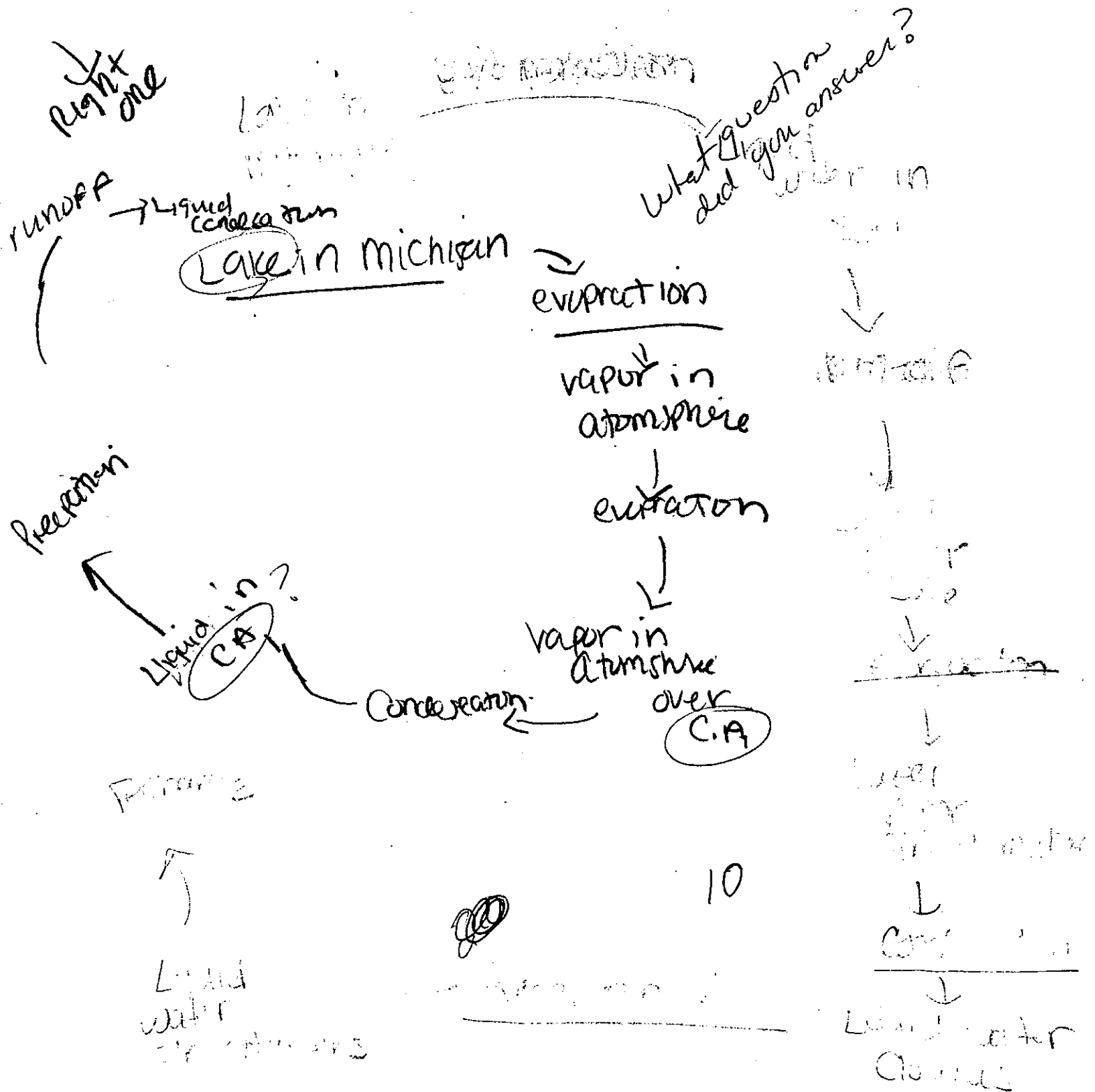


9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
b. been less
c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
b. Plants convert energy into biomass
c. Plants release energy

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

SHORT ANSWER. 25 points each (50 points total)

- 1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato.** You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- Water phase at each step in the journey
 - A name for each process that moves or transforms water



2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

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- The energy that is causing movement or transformation of water.

2
Because warm air is less dense than cold air and air temperature changes according to the position of the ocean. At low latitudes, air is warmer so it will rise and when it is higher air is colder. And since air cool as it rises so air in the upper atmosphere sinks and replacing warmer air in the lower atmosphere.

EXTRA CREDIT (2 points)

EC How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

See me.

50 12

YOUR SCORE:

62

STUDENT ID #: A42005463; GROUP #: 3

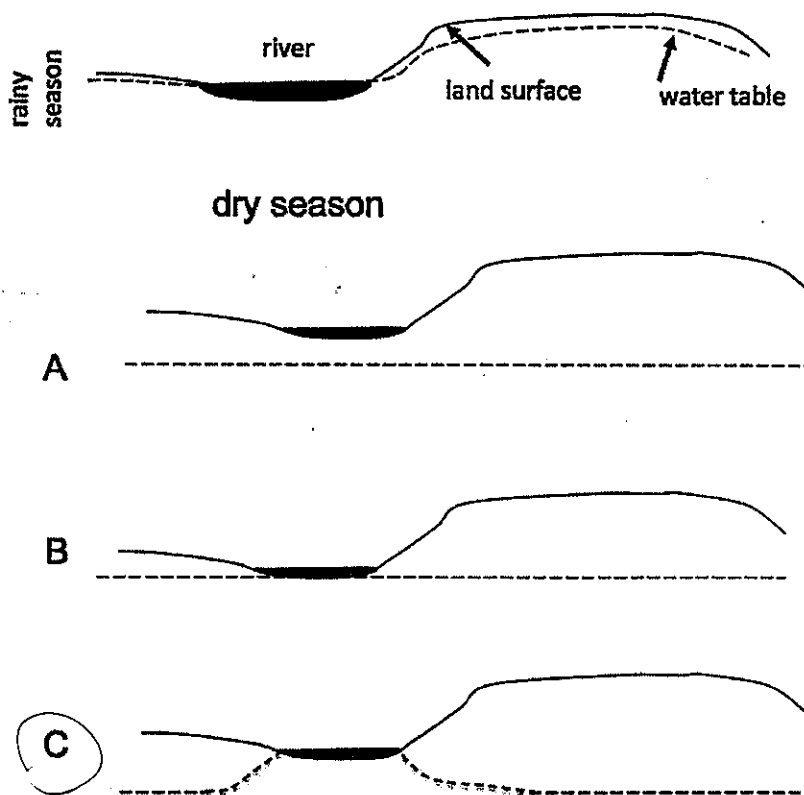
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?
a. Water molecules become larger
☒ b. Gaseous water becomes liquid water
c. Hydrogen and oxygen atoms combine to form liquid water
d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
a. The atmosphere
b. Oceans
☒ c. Glaciers
d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
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4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of ____A____, then becomes water in a glacier through the process of ____B____, and then becomes water in clouds through the process of ____C____.
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6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
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b. This is the opposite of what one would predict with global warming
c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
b. A = gravitational, B= gravitational, C= thermal
c. A = gravitational, B= thermal, C= thermal
d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?

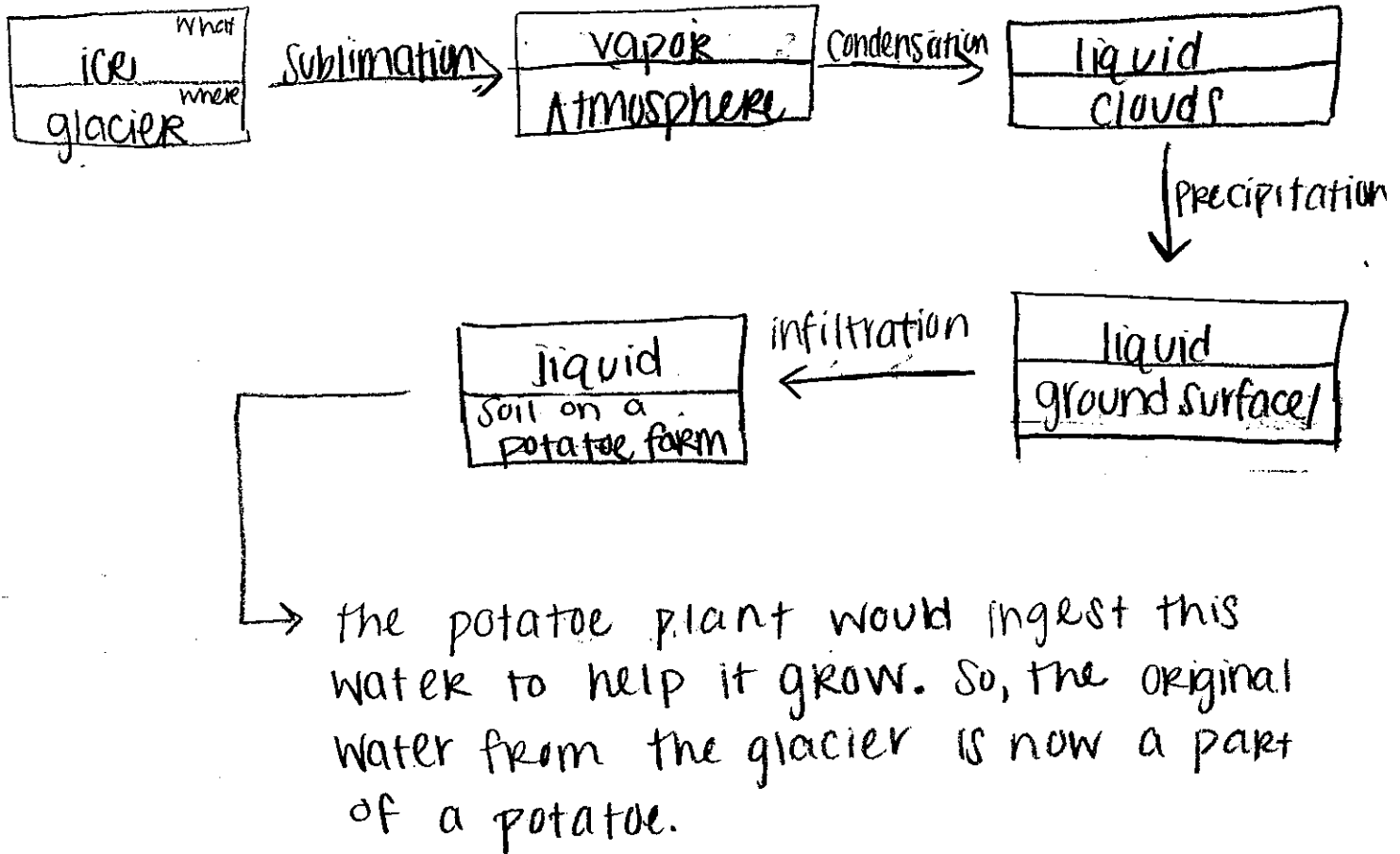


9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
b. been less
c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
b. Plants convert energy into biomass
c. Plants release energy

A42005463

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- Water phase at each step in the journey
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25

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- a. Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - b. The energy that is causing movement or transformation of water.

If polar ice contained more salt than the surrounding seawater from which it freezes, it would disrupt the thermohaline circulation. If the polar ice caps were to suddenly melt, they would release all that salt into the ocean. Upon the release of the extra salt, this would increase the thermohaline circulation. because salt water is more dense so it would increase the rate at which the cycle takes place. This circulation happens due to the warm and cool temperatures of the ocean and the density & buoyancy of each temperature. Cool water is more dense so it plummets to the bottom of the ocean until it begins to warm and rise. So, the increase in salt would increase the density causing the water to sink and cool. &?

EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- a. They both destroy matter during energy conversion
- b. They both convert thermal energy into gravitational energy
- c. They both convert chemical energy into thermal energy
- d. They both convert kinetic energy into potential energy.

45 37
YOUR SCORE:
82

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

1

STUDENT ID #: A42405167; GROUP #: 3

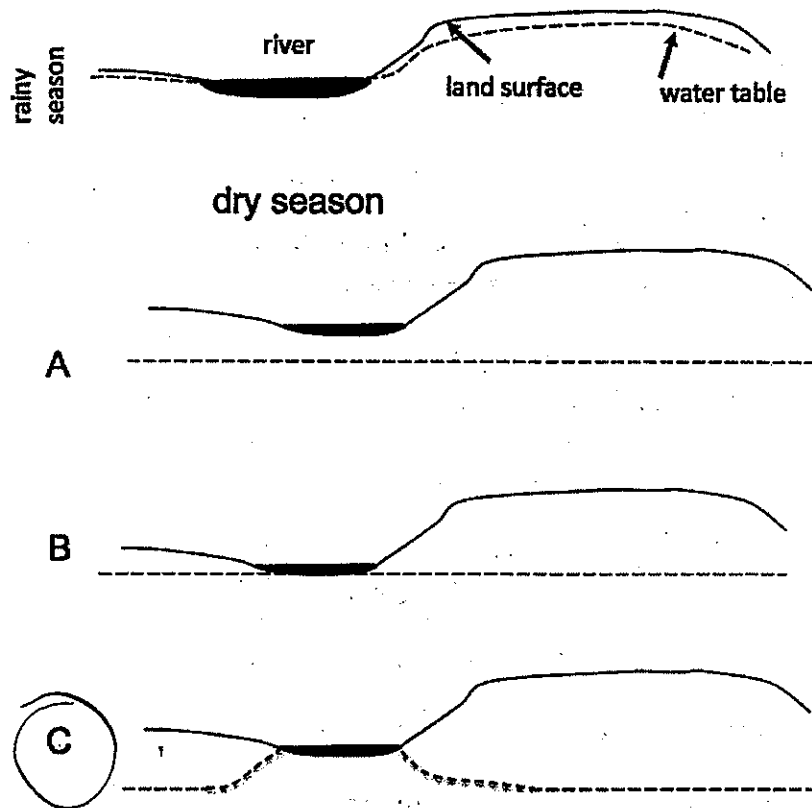
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?
a. Water molecules become larger
b. Gaseous water becomes liquid water
c. Hydrogen and oxygen atoms combine to form liquid water
d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
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b. Oceans
c. Glaciers
d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
a. Rainfall and surface runoff into the lake
b. Seasonal high water from the Mississippi River
c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
a. A= evaporation, B= deposition, C= sublimation
b. A = condensation, B= precipitation, C= evaporation
c. A= sublimation, B= precipitation, C= evaporation
d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
a. Liquid water from the pot condenses
b. Liquid water from the pot evaporates
c. Water vapor from the pot condenses
d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
a. This is what one would predict with global warming
b. This is the opposite of what one would predict with global warming
c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- ☒ c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:

- a. been greater
- b. been less
- c. remained the same

10. What happens when plants respire?

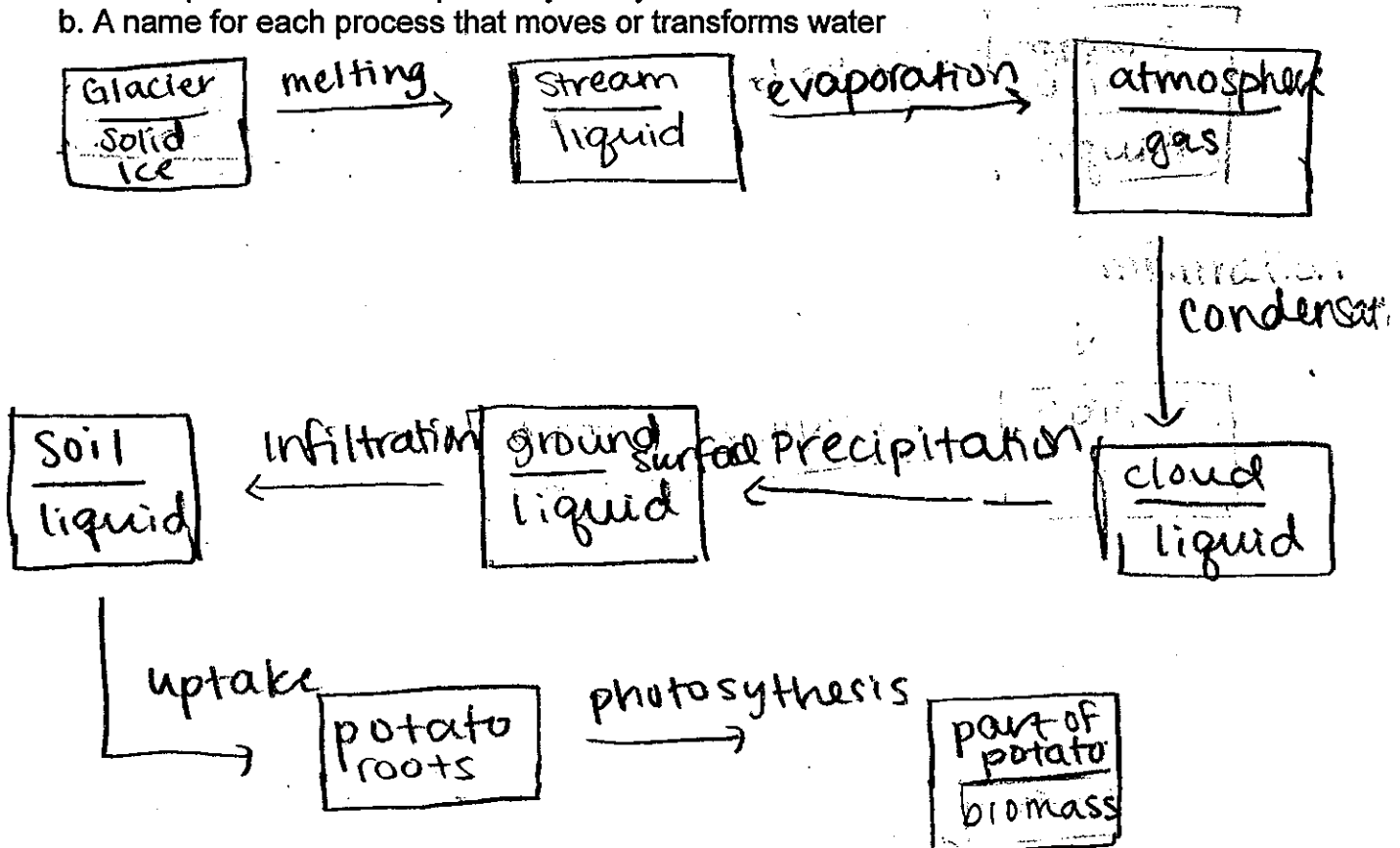
- ☒ a. Plants convert biomass into energy
- b. Plants convert energy into biomass
- c. Plants release energy

A42405167

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water

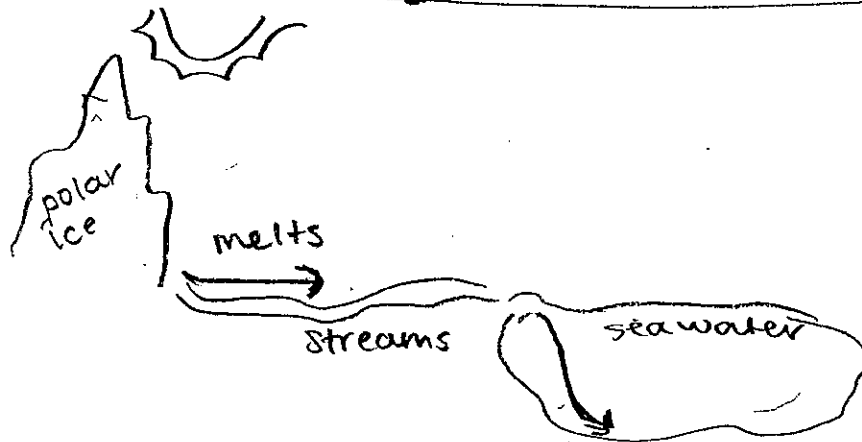


25

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

If the polar ice were to melt and discharge off into the oceans some of this salt would also enter the seawater. This new water would sink because of the greater density creating more of the colder denser water in the bottom of the oceans slowing down the thermohaline circulation



8 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- ☒ They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

45 37

YOUR SCORE:

82

STUDENT ID #: A42818831; GROUP #: 3

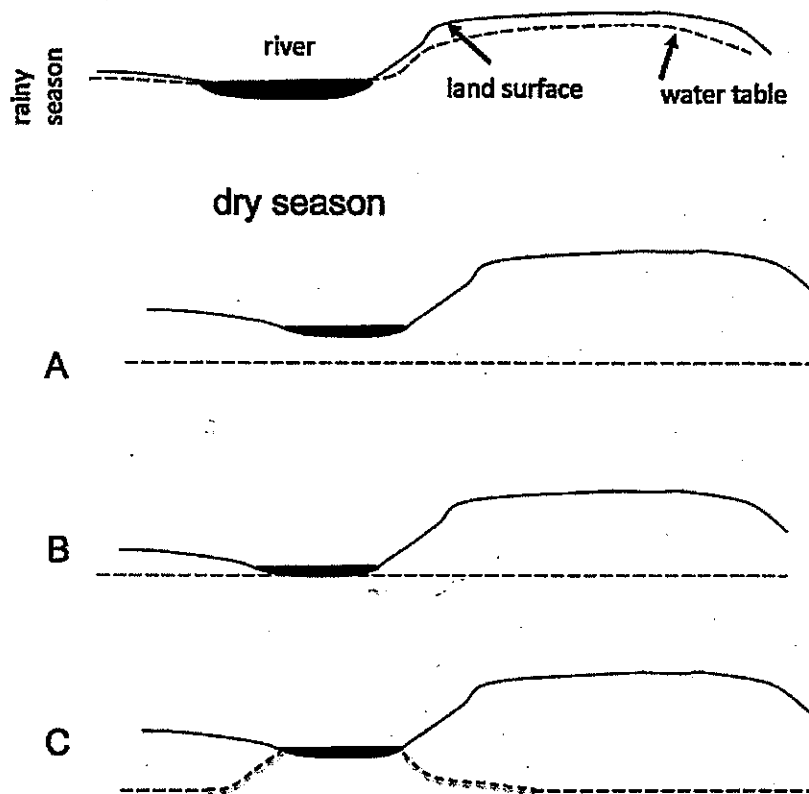
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?
a. Water molecules become larger
b. Gaseous water becomes liquid water
c. Hydrogen and oxygen atoms combine to form liquid water
d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
a. The atmosphere
b. Oceans
c. Glaciers
d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
a. Rainfall and surface runoff into the lake
b. Seasonal high water from the Mississippi River
c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
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a. This is what one would predict with global warming
b. This is the opposite of what one would predict with global warming
c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



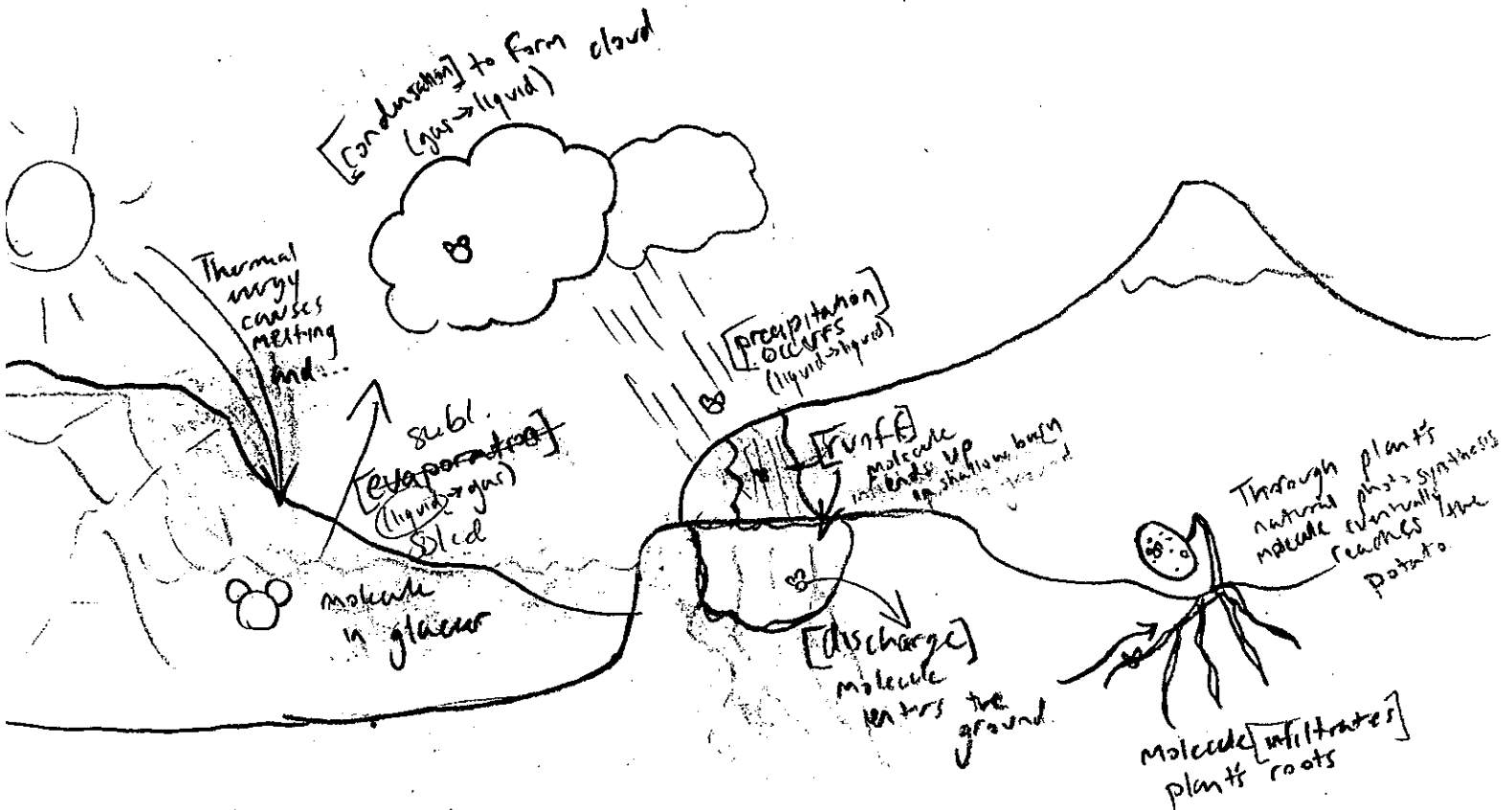
9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

A42818831

SHORT ANSWER. 25 points each (50 points total)

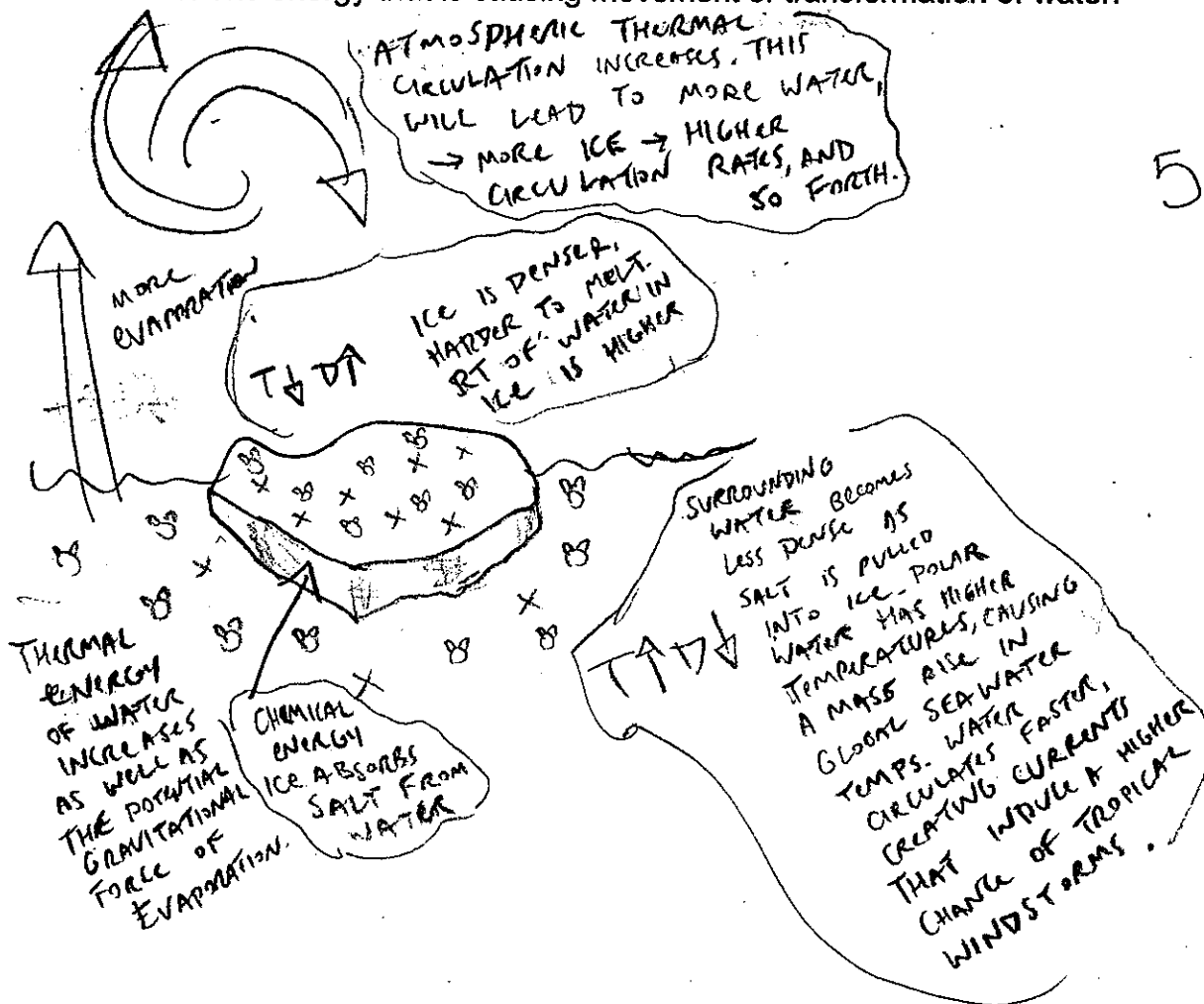
1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water



2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

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- The energy that is causing movement or transformation of water.



EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

35 29

YOUR SCORE:

64

STUDENT ID #: 43296853; GROUP #: 4

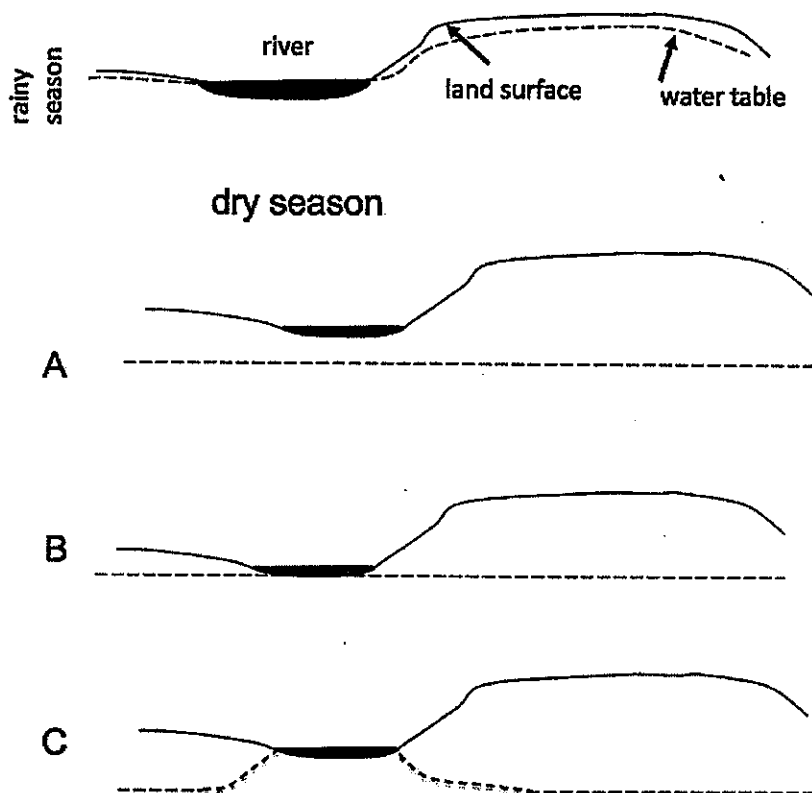
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 6
 - a. Water molecules become larger
 - b. Gaseous water becomes liquid water
 - c. Hydrogen and oxygen atoms combine to form liquid water
 - d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
 - a. The atmosphere
 - b. Oceans
 - c. Glaciers
 - d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
 - a. Rainfall and surface runoff into the lake
 - b. Seasonal high water from the Mississippi River
 - c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
 - a. A= evaporation, B= deposition, C= sublimation
 - b. A = condensation, B= precipitation, C= evaporation
 - c. A= sublimation, B= precipitation, C= evaporation
 - d. A = precipitation, B= freezing, C= condensation
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 - b. Liquid water from the pot evaporates
 - c. Water vapor from the pot condenses
 - d. Water vapor from the pot evaporates
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 - a. This is what one would predict with global warming
 - b. This is the opposite of what one would predict with global warming
 - c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



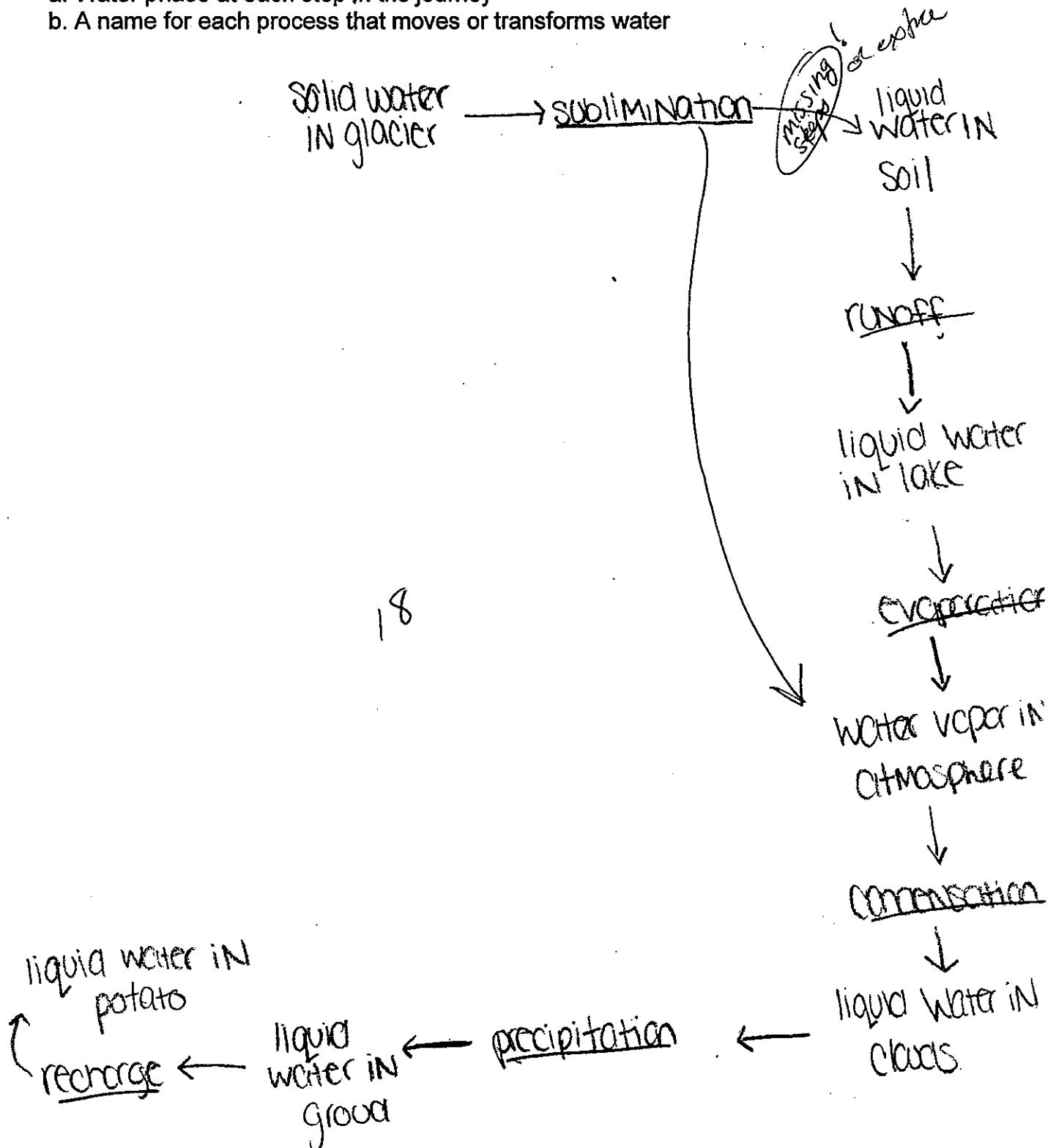
9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

A43296853

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
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223294541

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

4

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

Circulation takes place because warm air is less dense than cool air. So when warm air is in the atmosphere it rises till it finally cools then returns back down. If polar ice contained more salt than the surrounding seawater then the thermohaline circulation would change due to the fact that the thermal NRE need to circulate the waters would have to increase because the ice has become more dense.

2

~~EXTRA CREDIT~~ (2 points)

~~EC~~ How are burning wood and respiration similar?

- ☒ They both destroy matter during energy conversion
- b. They both convert thermal energy into gravitational energy
- c. They both convert chemical energy into thermal energy
- d. They both convert kinetic energy into potential energy.

30 20

YOUR SCORE:

50

STUDENT ID #: A42460239; GROUP #: 2

actually 9 → 4

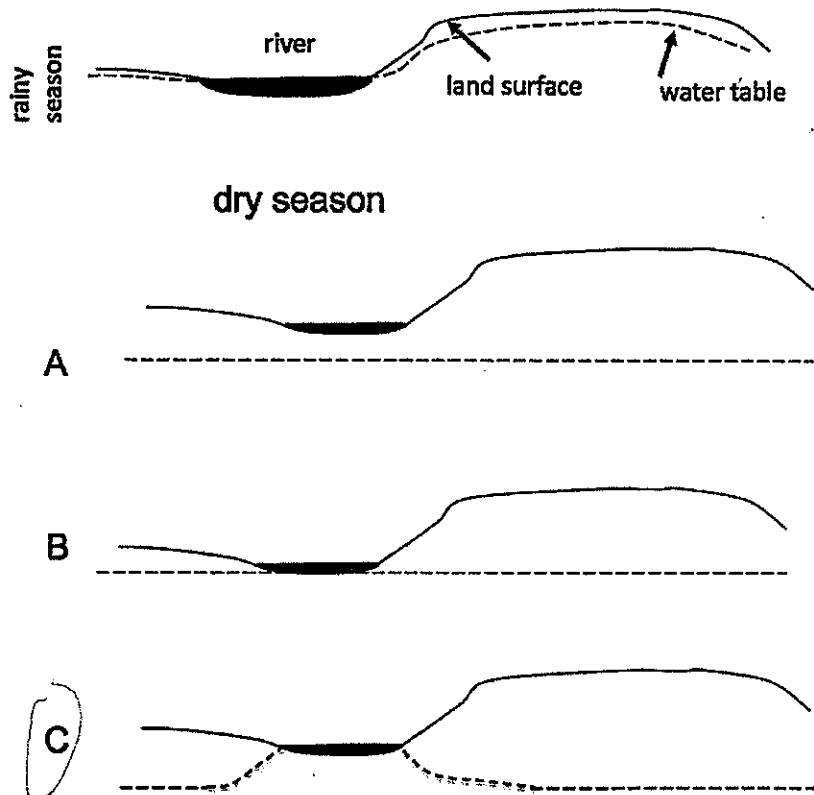
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?
a. Water molecules become larger
b. Gaseous water becomes liquid water
c. Hydrogen and oxygen atoms combine to form liquid water
d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
a. The atmosphere
b. Oceans
c. Glaciers
d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
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4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
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c. Water vapor from the pot condenses
d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
a. This is what one would predict with global warming
b. This is the opposite of what one would predict with global warming
c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of grav A energy. Water in the atmosphere becomes water in clouds as a result of B energy. Water in clouds becomes water in the atmosphere as the result of C energy.

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:

- a. been greater
- b. been less ✓
- c. remained the same



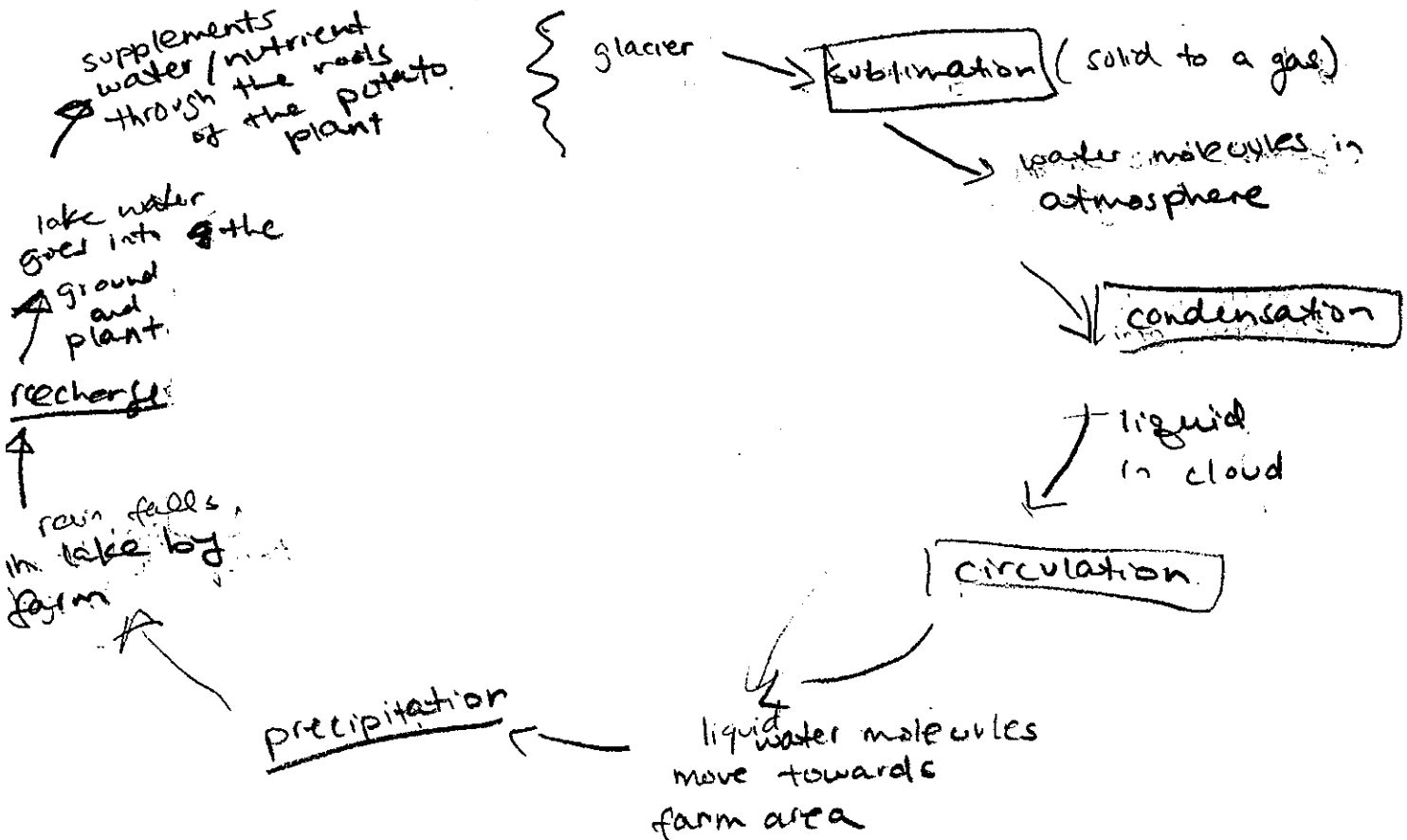
10. What happens when plants respire?

- a. Plants convert biomass into energy
- b. Plants convert energy into biomass
- c. Plants release energy

A 42 460239

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- a. Water phase at each step in the journey
 - b. A name for each process that moves or transforms water



2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- a. Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - b. The energy that is causing movement or transformation of water.

Circulation happens because of the different densities of hot / cold air and water. Cold air is usually more dense while hot air is less dense and rises. Furthermore, when hot air rises, it cools and replaces cooler waters and process become a continuous cycle.

Thermohaline circulation would change if polar ice contained more salt than the surrounding sea water because salinity is ~~one~~ one of the factors that changes density in water. Ice is less dense than ^{warm} water and salt water is more dense than freshwater. No longer would warm currents be able to circulate to polar regions and allow the colder water to warm up the warmer (equatorial areas) and thermohaline circulation would eventually cease.

25

chemical energy → salt is added transforms water into salt water

EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- a. They both destroy matter during energy conversion
- b. They both convert thermal energy into gravitational energy
- c. They both convert chemical energy into thermal energy
- d. They both convert kinetic energy into potential energy.

30 10

YOUR SCORE:

80

STUDENT ID #: A42288544; GROUP #: 4

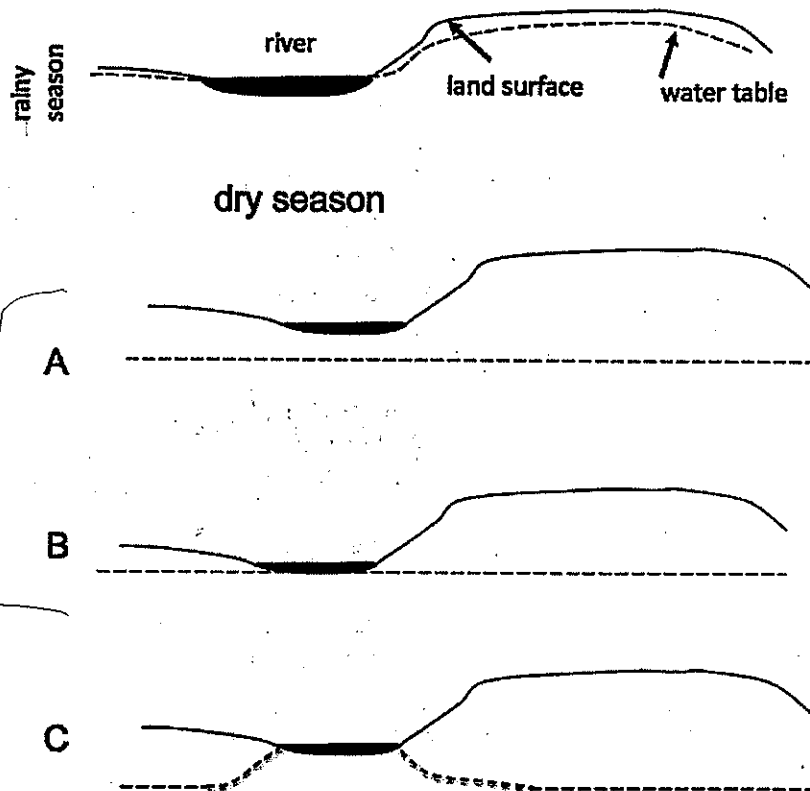
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 6
 - a. Water molecules become larger
 - ✓ b. Gaseous water becomes liquid water
 - c. Hydrogen and oxygen atoms combine to form liquid water
 - d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
 - a. The atmosphere
 - b. Oceans
 - ✓ c. Glaciers
 - d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
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 - b. Seasonal high water from the Mississippi River
 - c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
 - a. A= evaporation, B= deposition, C= sublimation
 - b. A = condensation, B= precipitation, C= evaporation
 - c. A= sublimation, B= precipitation, C= evaporation
 - d. A = precipitation, B= freezing, C= condensation
- ✗ 5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
 - a. Liquid water from the pot condenses
 - b. ~~Liquid water from the pot evaporates~~
 - ✓ c. Water vapor from the pot condenses
 - d. ~~Water vapor from the pot evaporates~~
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
 - a. This is what one would predict with global warming ✓
 - b. This is the opposite of what one would predict with global warming
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7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
b. A = gravitational, B= gravitational, C= thermal
c. A = gravitational, B= thermal, C= thermal
d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
b. been less
c. remained the same
- ice floats in H₂O*
ice has lower density

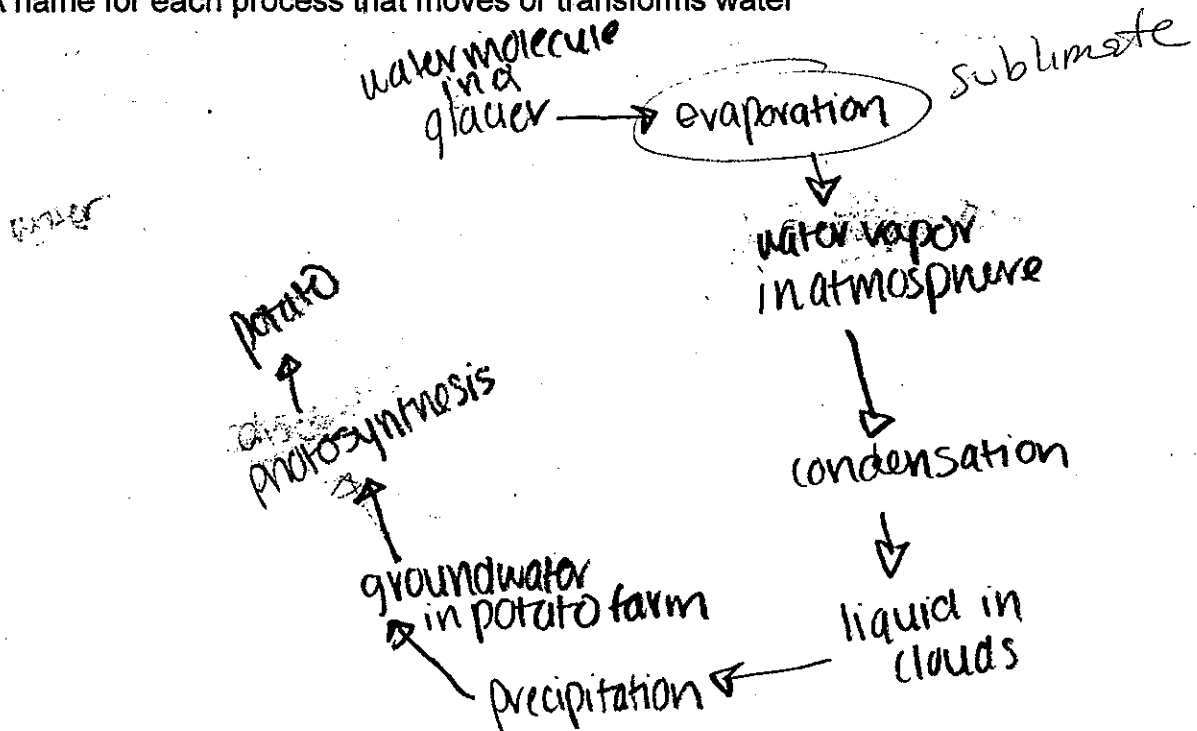
10. What happens when plants respire?

- a. Plants convert biomass into energy
b. Plants convert energy into biomass
c. Plants release energy
- CO₂ to O₂*

A 42288544

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- a. Water phase at each step in the journey
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The water molecules move from glacier through evaporation to the atmosphere. then they condense to become liquid in clouds + then fall as precipitation. then they become groundwater in the potato farm. the water is sucked up through roots + used during photosynthesis as energy.

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

If polar ice contained ^{more} salt, they would be less dense than they already are. Because they contained more salt than surrounding sea water it would float on top more. This colder water would change the thermohaline circulation which depends on oceanic temperatures + wind currents. As warm water rises + cold water sinks, the ice would affect the overall temperature of the seawater. The circulation which brings warm waters in from equator through wind currents affected by temperature + density of water, would be thrown off causing water to cool faster over polar ice caps and the overall temperature would be cooler.

Ⓢ

5

7 EXTRA CREDIT (2 points) respiration = in 102 out 02

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

30 29

YOUR SCORE:

59

STUDENT ID #: A42115313; GROUP #: 5

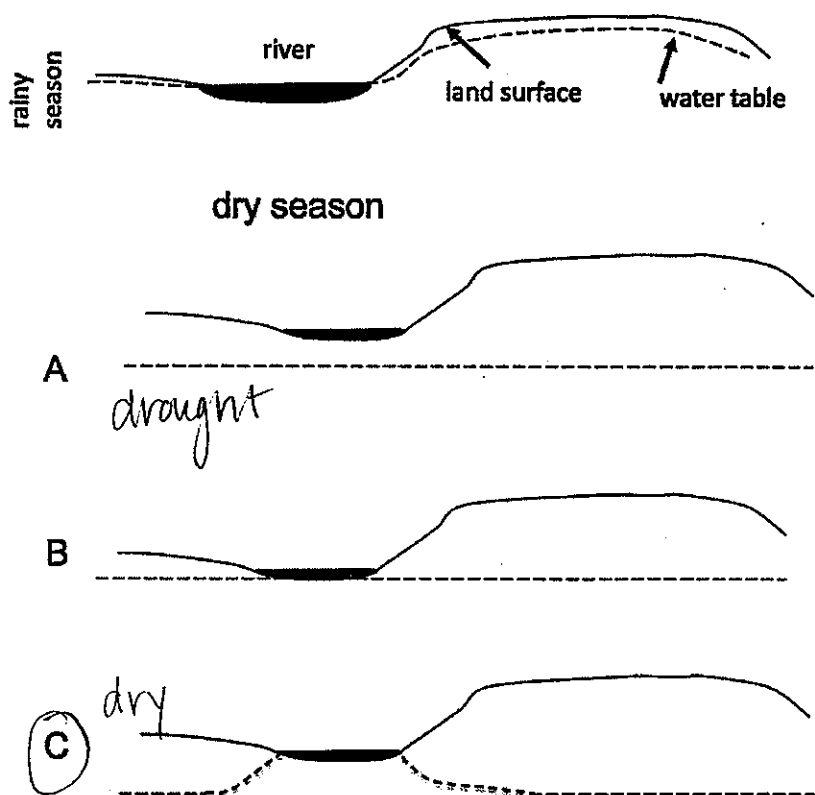
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 7
~~a. Water molecules become larger~~
☒ b. Gaseous water becomes liquid water
~~c. Hydrogen and oxygen atoms combine to form liquid water~~
d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
a. The atmosphere
b. Oceans
☒ c. Glaciers
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☒ a. Rainfall and surface runoff into the lake
b. Seasonal high water from the Mississippi River
~~c. Ground water from beneath the surface~~
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of ____A____, then becomes water in a glacier through the process of ____B____, and then becomes water in clouds through the process of ____C____.
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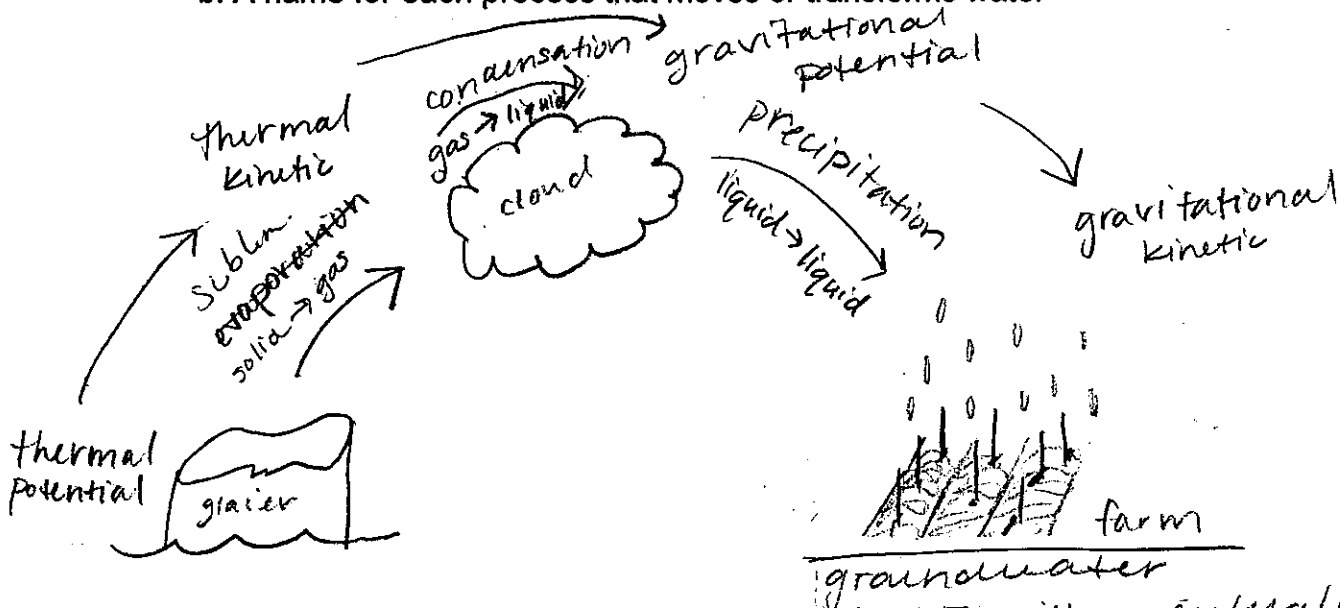


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 - b. been less
 - c. remained the same
10. What happens when plants respire?
- ☒ a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water



A water molecule from a glacier will eventually evaporate into the atmosphere where it then condenses into a cloud. Then precipitation will occur causing the water molecule to fall back down to the earth where it will go into a reservoir. In this case the water molecule goes into the groundwater of a potato farm where the roots eventually soak up the molecule & use the water to grow a potato.

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
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 - b. The energy that is causing movement or transformation of water.

thermohaline circulation: warm water from equator flows & mixes with cool polar water.

Thermohaline circulation happens because the sun's radiation is stronger at the equator. This causes wind circulation which influences the oceans circulation as well, resulting in the warm equatorial ocean currents flowing towards the poles. If polar ice contained more salt this would not change thermohaline circulation because it has no effect on the sun's solar radiation which is the energy that causes the coriolis effect. 15

EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- a. They both destroy matter during energy conversion
- b. They both convert thermal energy into gravitational energy
- c. They both convert chemical energy into thermal energy
- d. They both convert kinetic energy into potential energy.

35 37

YOUR SCORE:

72

STUDENT ID #: 182 A40004959; GROUP #: 5

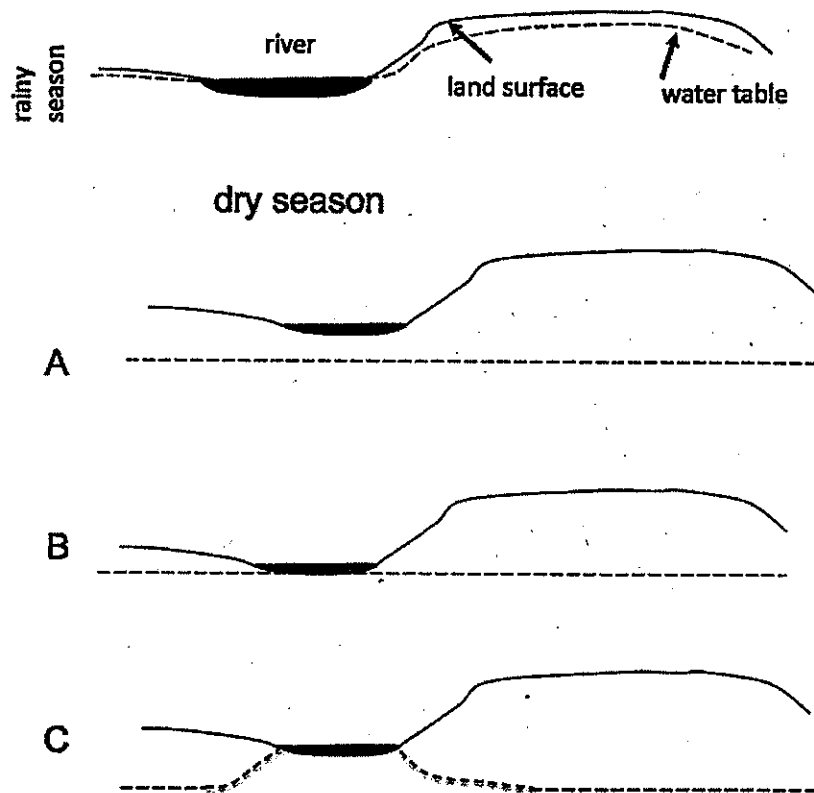
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

- 8
1. What happens when water molecules condense?
 - a. Water molecules become larger
 - b. Gaseous water becomes liquid water
 - c. Hydrogen and oxygen atoms combine to form liquid water
 - d. The temperature of water molecules decreases
 2. Which of the following is the largest freshwater reservoir
 - a. The atmosphere
 - b. Oceans
 - c. Glaciers
 - d. Lakes and streams
 3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
 - a. Rainfall and surface runoff into the lake
 - b. Seasonal high water from the Mississippi River
 - c. Ground water from beneath the surface
 4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
 - a. A= evaporation, B= deposition, C= sublimation
 - b. A = condensation, B= precipitation, C= evaporation
 - c. A= sublimation, B= precipitation, C= evaporation
 - d. A = precipitation, B= freezing, C= condensation
 5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
 - a. Liquid water from the pot condenses
 - b. Liquid water from the pot evaporates
 - c. Water vapor from the pot condenses
 - d. Water vapor from the pot evaporates
 6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
 - a. This is what one would predict with global warming
 - b. This is the opposite of what one would predict with global warming
 - c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater - Because of displacement?
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

A40004959

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water

There are many ways in which a water molecule could move from a glacier to a potato. To spare my self from embarrassment, I won't be drawing, rather I will write how this happens. During the spring thaw, the water molecule (WM) is released from its bonds in ice through thermal energy; it melts ^{becoming liquid}. It then travels down the mountain as runoff pulled by gravity. At some point, after passing through mighty torrents and maelstroms, the molecule is heated and it evaporates, becoming water vapor. The molecule rises and rises, getting cooler, until it condenses into liquid water, a part of a cloud in a major storm front. It moves from the mountains to a lush field in Idaho, where gravity pulls it down, in what's called Precipitation. It lands near a potato, where then it sinks into the ground through a process called sublimation and then is sucked into the potato to be used in photosynthesis.

where	form	process
Glacier	Ice	
river	liquid	runoff
river	water vapor	evaporation
Cloud	liquid	condensation
air	liquid	Precipitation
ground	liquid	sublimation

25

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

The circulation would change in that the water melting off the glaciers would be denser than that of the water surrounding it, making it sink to the bottom. Circulation happens because as the waters near the equator are warmed, the warmer water rises, it flows towards the poles because of gravity or something, where it gets cooler and sinks to the bottom. Therefore if the water coming off the glaciers were saltier, it would screw up the whole system.

10

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

40 37

YOUR SCORE:

77

STUDENT ID #: 40659472; GROUP #: 5

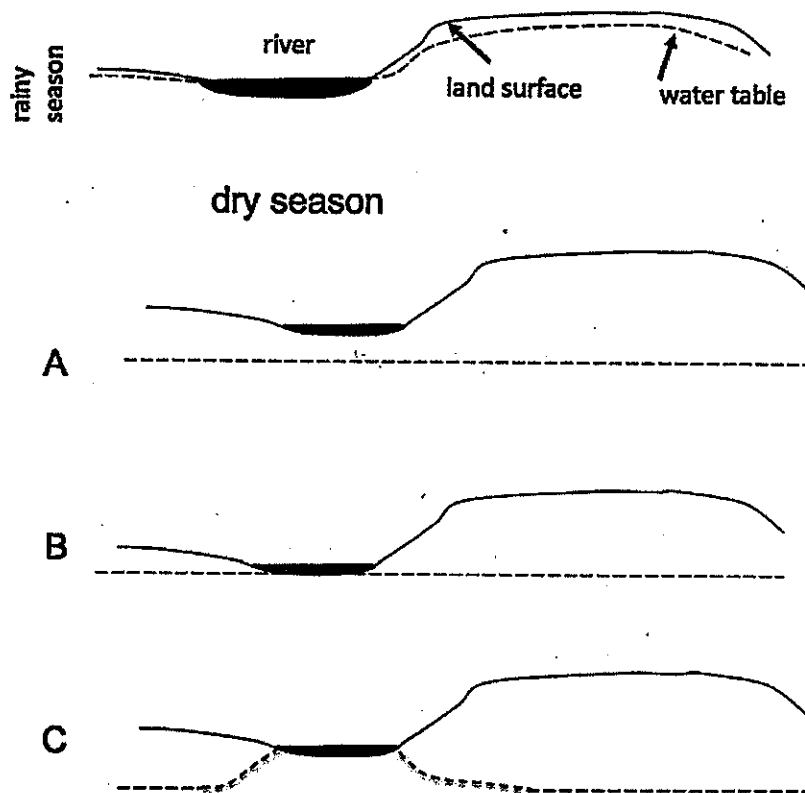
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

- 6
1. What happens when water molecules condense?
 - a. Water molecules become larger
 - b. Gaseous water becomes liquid water
 - c. Hydrogen and oxygen atoms combine to form liquid water
 - d. The temperature of water molecules decreases
 2. Which of the following is the largest freshwater reservoir
 - a. The atmosphere
 - b. Oceans
 - c. Glaciers
 - d. Lakes and streams
 3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
 - a. Rainfall and surface runoff into the lake
 - b. Seasonal high water from the Mississippi River
 - c. Ground water from beneath the surface
 4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
 - a. A= evaporation, B= deposition, C= sublimation
 - b. A = condensation, B= precipitation, C= evaporation
 - c. A= sublimation, B= precipitation, C= evaporation
 - d. A = precipitation, B= freezing, C= condensation
 5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
 - a. Liquid water from the pot condenses
 - b. Liquid water from the pot evaporates
 - c. Water vapor from the pot condenses
 - d. Water vapor from the pot evaporates
 6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
 - a. This is what one would predict with global warming
 - ☒ b. This is the opposite of what one would predict with global warming
 - c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- a. Water phase at each step in the journey
- b. A name for each process that moves or transforms water

The water molecule will start off in a glacier. As the glacier melts, gravitational energy will discharge the water to surface water and eventually to ground water. The ground water will recharge into a nearby lake where thermal energy will force its evaporation into the atmosphere. Thermal energy will then cause the water to condense itself into a cloud, which gravitational energy will cause to precipitate. Once the water has reached the earth gravitational energy will once again discharge it to groundwater where it will eventually recharge into a nearby aquifer. The aquifer is being used by a local potato farmer and the water will be used to water his crops. Through transpiration, the potato will gather the water.

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- a. Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - b. The energy that is causing movement or transformation of water.

Thermohaline Circulation is the process of water and air circulating from the equator to the poles and back again to the equator. This circulation occurs due to changes in density due to thermal energy.

If the ice contained more salt than the surrounding seawater then the areas would become more dense from the melting ice being saltier. The added density would slow down the thermohaline circulation, as denser water is more likely to stay at the poles.

25

EXTRA CREDIT (2 points)

- EC. How are burning wood and respiration similar?
- a. They both destroy matter during energy conversion
 - b. They both convert thermal energy into gravitational energy
 - c. They both convert chemical energy into thermal energy
 - d. They both convert kinetic energy into potential energy.

30 43

YOUR SCORE:

73

STUDENT ID #: A40555917; GROUP #: 5

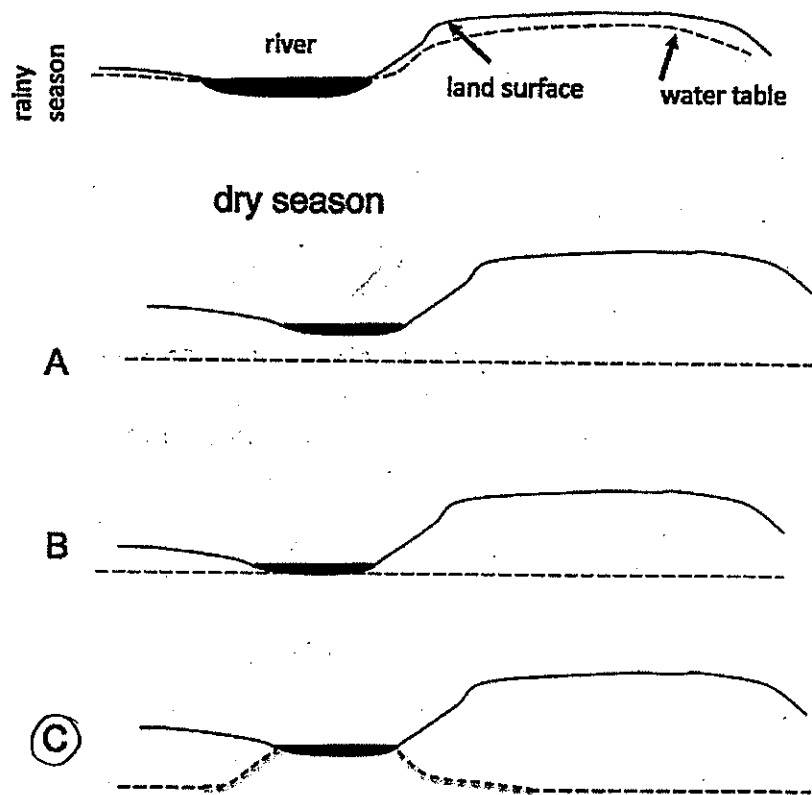
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?
a. Water molecules become larger
☒ b. Gaseous water becomes liquid water
c. Hydrogen and oxygen atoms combine to form liquid water
d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
a. The atmosphere
b. Oceans
☒ c. Glaciers
d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
a. Rainfall and surface runoff into the lake
☒ b. Seasonal high water from the Mississippi River
☒ c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
☒ a. A= evaporation, B= deposition, C= sublimation
b. A = condensation, B= precipitation, C= evaporation
c. A= sublimation, B= precipitation, C= evaporation
d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
☒ a. Liquid water from the pot condenses
☒ b. Liquid water from the pot evaporates
c. Water vapor from the pot condenses
d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
☒ a. This is what one would predict with global warming
b. This is the opposite of what one would predict with global warming
c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- ☐ A = chemical, B = thermal, C = thermal
☒ A = gravitational, B = gravitational, C = thermal
☐ A = gravitational, B = thermal, C = thermal
☐ A = thermal, B = thermal, C = thermal

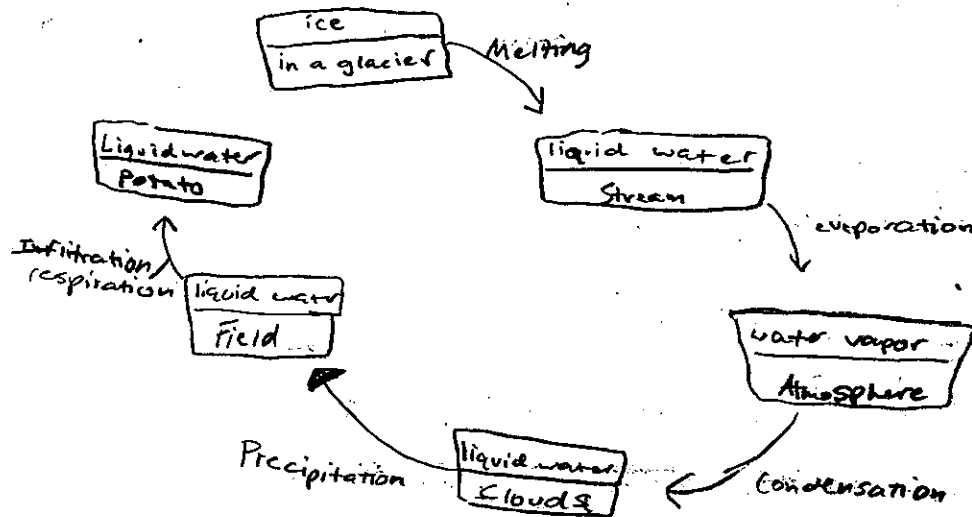
8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- ☒ a. been greater
☐ b. been less
☐ c. remained the same
10. What happens when plants respire?
- ☐ a. Plants convert biomass into energy
☒ b. Plants convert energy into biomass
☐ c. Plants release energy

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- a. Water phase at each step in the journey
 - b. A name for each process that moves or transforms water



1. Ice in a glacier melts to liquid water in a stream.
2. This water evaporates to form water vapor in the atmosphere.
3. This water vapor condenses to form liquid in clouds.
4. This liquid water precipitates onto a field that is growing the potatoes.
5. This surface liquid water infiltrates into the roots/stems of the potato.

6. TA - DA !!

25

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

Circulation happens because hot air is less dense than cold air, so hot air rises and cold air sinks creating a circular motion like this one.



Thermohaline circulation in oceans would change if the polar ice contained more salt than surrounding sea water from which it freezes because if the ice was more dense there would be more fresh water in the oceans. This would cause more evaporation b/c there is less salt holding it back. The water cycle would be the same but there would be more water and less glaciers.

7 < 80
Salt 80

15

EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

30 42

YOUR SCORE:

72

STUDENT ID #: A426000605; GROUP #: 6

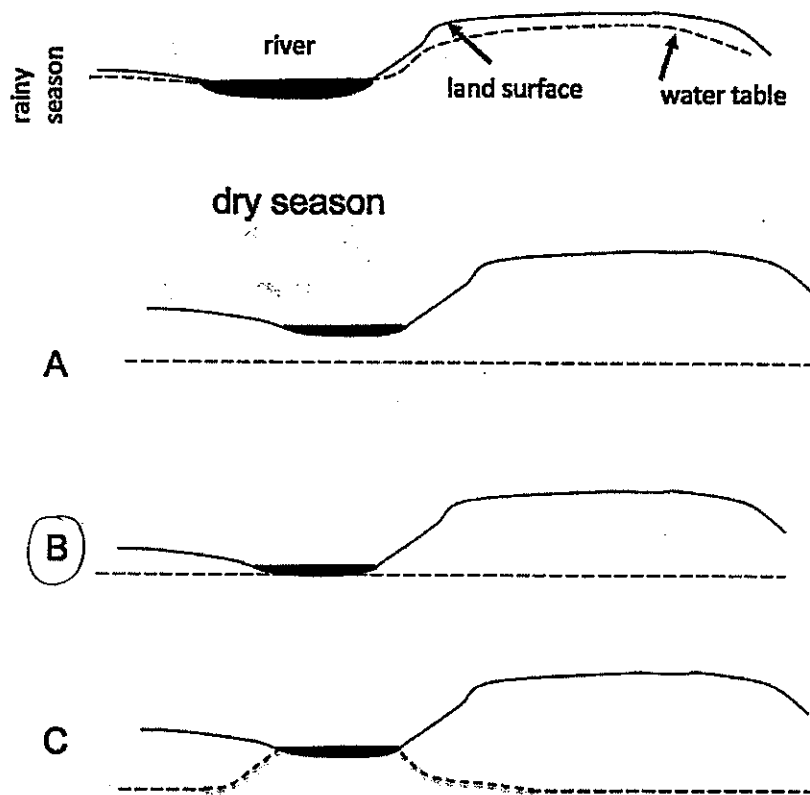
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?
a. Water molecules become larger
b. Gaseous water becomes liquid water
☒ c. Hydrogen and oxygen atoms combine to form liquid water
d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
a. The atmosphere
b. Oceans
☒ c. Glaciers
d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
☒ a. Rainfall and surface runoff into the lake
b. Seasonal high water from the Mississippi River
c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of ____A____, then becomes water in a glacier through the process of ____B____, and then becomes water in clouds through the process of ____C____.
☒ a. A= evaporation, B= deposition, C= sublimation
b. A = condensation, B= precipitation, C= evaporation
c. A= sublimation, B= precipitation, C= evaporation
d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
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b. Liquid water from the pot evaporates
☒ c. Water vapor from the pot condenses
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6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
☒ a. This is what one would predict with global warming
b. This is the opposite of what one would predict with global warming
c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
- ☒ b. A = gravitational, B= gravitational, C= thermal
- c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- ☒ a. been greater
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- ☒ a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

2. When ice forms from seawater, the ice contains less salt than the remaining water.

Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

2

Thermohaline circulation in Oceans would change if polar ice contained more salt than the surrounding sea water because firstly ice is less dense than water. If the ice contained more salt it would create many other bodies of water to become salt water areas. This is because along w/ the process of ice comes melting and evaporation. The melting water would just add to the sea water while the evaporating water would end up in the atmosphere and eventually become liquid in a cloud w/ this process also comes precipitation. Precipitation would be concentrated w/ the salty water and when pulled back down to the atmosphere through gravity and rain would create many other areas to be concentrated w/ the salty water such as streams that would run off into lakes or other reservoirs and eventually infiltrate into the soil. ^{does not evaporate}

EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

30 20

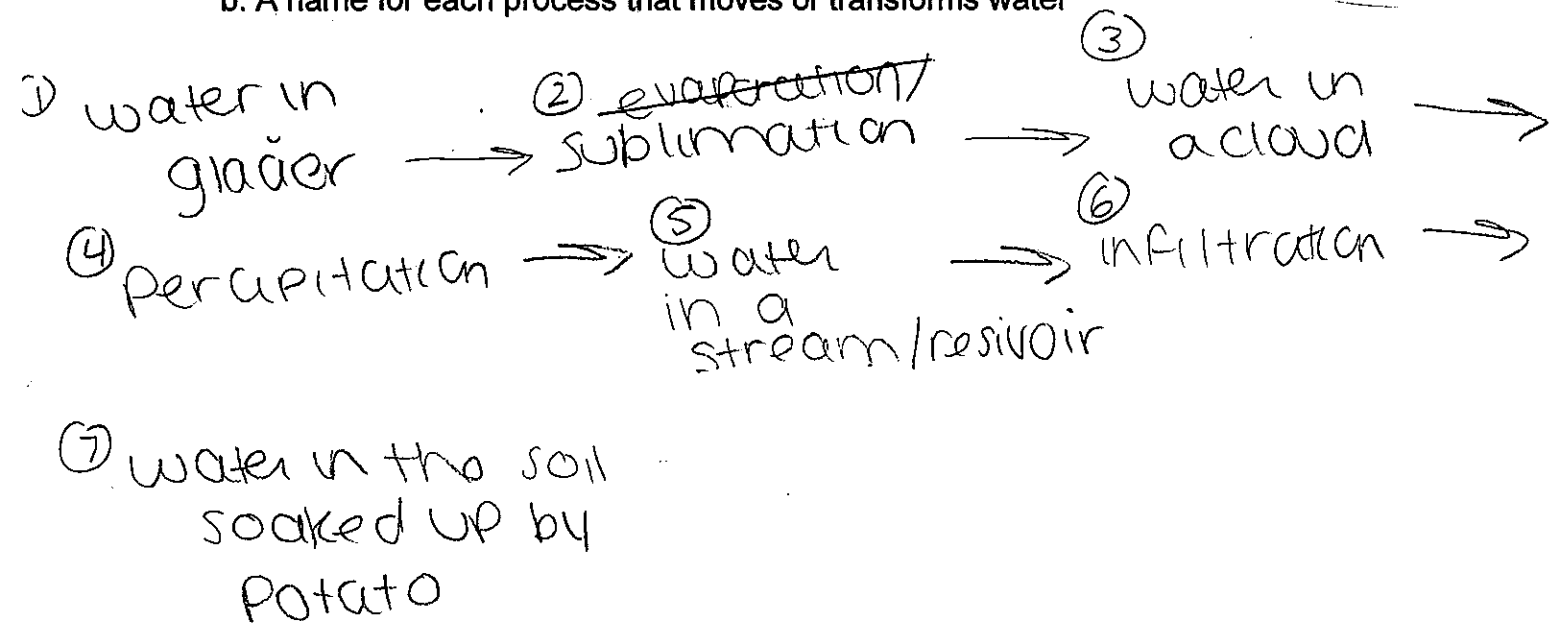
YOUR SCORE:

50

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water



~~James H. Sibley~~
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

1

STUDENT ID #: A42205094 ; **GROUP #:** 6

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

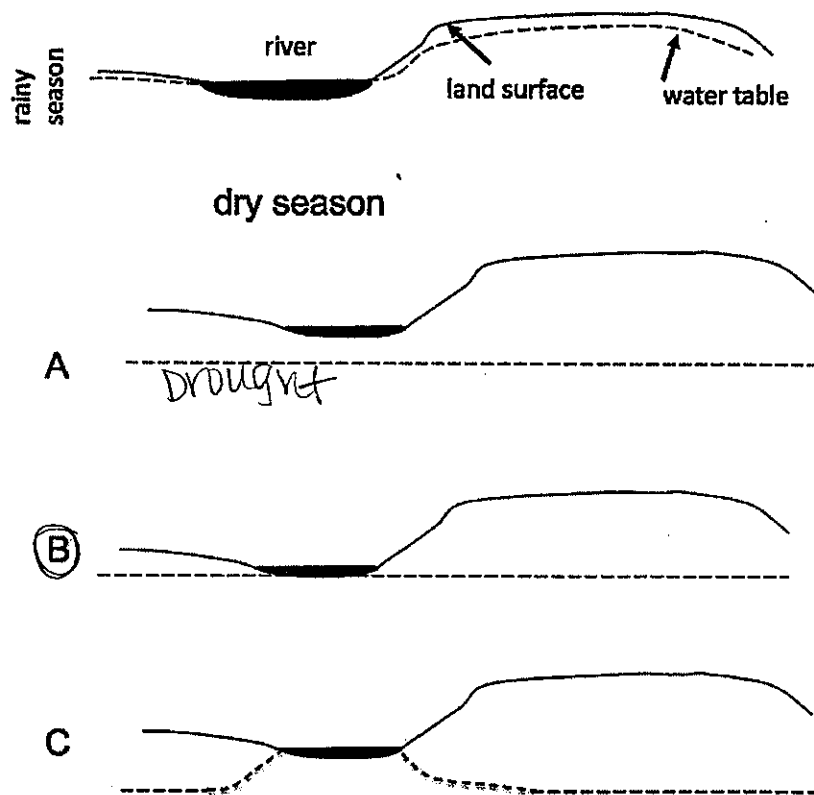
1. What happens when water molecules condense? 6
 - ~~a.~~ Water molecules become larger
 - b. Gaseous water becomes liquid water
 - c. Hydrogen and oxygen atoms combine to form liquid water
 - ☒ d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
 - a. The atmosphere
 - b. Oceans
 - ☒ c. Glaciers
 - d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
 - a. Rainfall and surface runoff into the lake
 - ~~b.~~ Seasonal high water from the Mississippi River
 - ☒ c. Ground water from beneath the surface cor d ev
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A , then becomes water in a glacier through the process of B , and then becomes water in clouds through the process of C .
 - ~~a.~~ A= evaporation, B= deposition, C= sublimation
 - ☒ b. A = condensation, B= precipitation, C= evaporation
 - c. A= sublimation, B= precipitation, C= evaporation
 - ~~d.~~ A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
 - ~~a.~~ Liquid water from the pot condenses
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 - c. Water vapor from the pot condenses
 - ☒ d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
 - ☒ a. This is what one would predict with global warming
 - b. This is the opposite of what one would predict with global warming
 - ~~c.~~ Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

grav. therm. grav.

- ☐ A = chemical, B = thermal, C = thermal
b. A = gravitational, B = gravitational, C = thermal
☒ c. A = gravitational, B = thermal, C = thermal
d. A = thermal, B = thermal, C = thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?

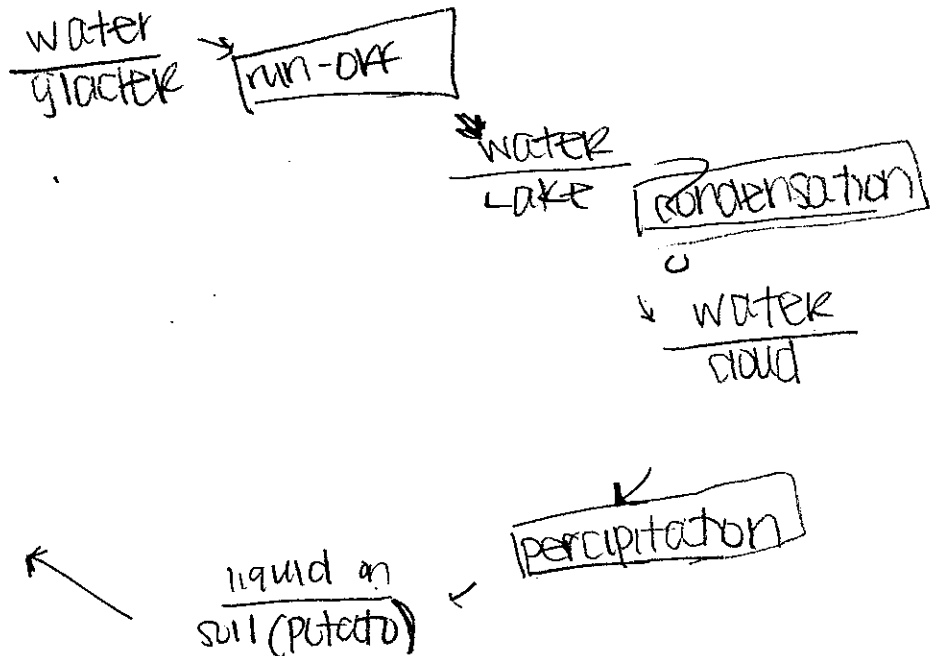


9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
☒ b. been less
c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
☒ b. Plants convert energy into biomass
☐ c. Plants release energy

A4122050941

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- a. Water phase at each step in the journey
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2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - The energy that is causing movement or transformation of water.

Thermohaline circulation would change because salt water would then become more dense than clean water and it could potentially cause harm. The polar ice caps would no longer be the main freshwater reservoir and the animals feeding off it will begin getting/intaking too much salt. Circulation happens to keep things in a reasoning flow and help to maintain. The energy within the transfer of the air and the glacier caps is thermal and gravitational.

2

EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

30 12

YOUR SCORE:

42

STUDENT ID #: A43763919; GROUP #: 6

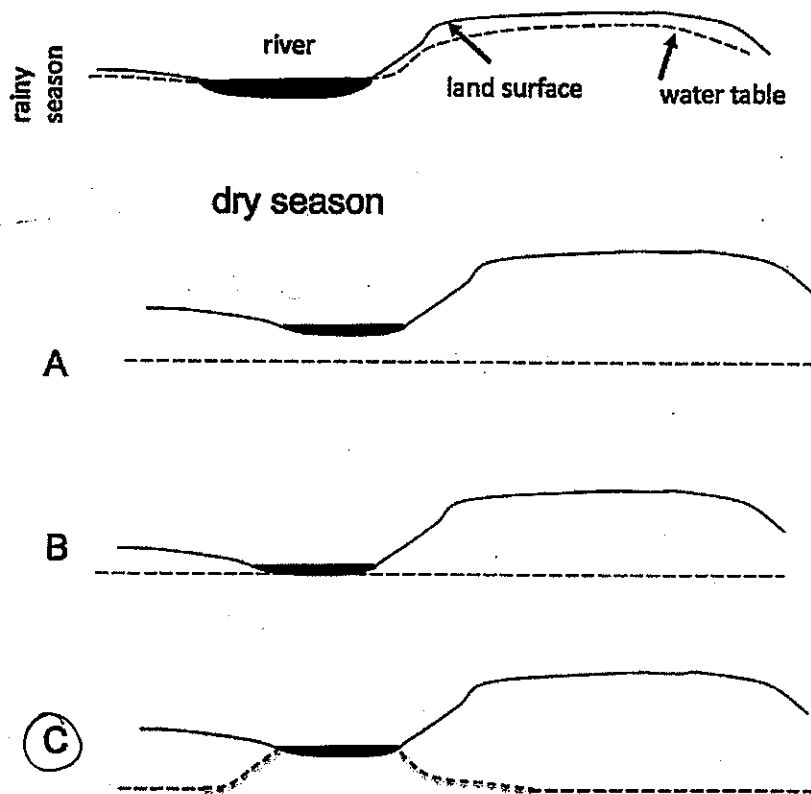
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?
a. Water molecules become larger
☒ b. Gaseous water becomes liquid water
c. Hydrogen and oxygen atoms combine to form liquid water
d. The temperature of water molecules decreases
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b. Oceans
c. Glaciers
☒ d. Lakes and streams
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a. A= chemical, B= thermal, C= thermal
b. A = gravitational, B= gravitational, C= thermal
c. A = gravitational, B= thermal, C= thermal
d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
b. been less
c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
b. Plants convert energy into biomass
c. Plants release energy

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- Water phase at each step in the journey
 - A name for each process that moves or transforms water

Beginning with a H_2O molecule from a glacier it melts & moves to ocean, lake stream or other groundwater source. Then through the process of runoff & discharge that molecule moves in liquid form from one groundwater source to another. From that source, water then evaporates from the groundwater source, becoming a vapor & moves into the atmosphere. It then condenses to form a cloud & then gravity pulls that H_2O molecule back down towards earth as rain used to water the potato crop. That molecule sinks into the ground & becomes soil water & is then used by the potato plant to grow.

25

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- a. Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- b. The energy that is causing movement or transformation of water.

If polar ice contained more salt than the surrounding seawater from which it freezes then that would mean that the rest of the surrounding water would be at a higher temperature. Removing the salt from the surrounding H₂O would require more thermal energy to keep it from freezing, so therefore it would have a higher kinetic thermal energy.

2

2

EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- a. They both destroy matter during energy conversion
- b. They both convert thermal energy into gravitational energy
- c. They both convert chemical energy into thermal energy
- d. They both convert kinetic energy into potential energy.

35 29

YOUR SCORE:

64

STUDENT ID #: A39966164; GROUP #: 6

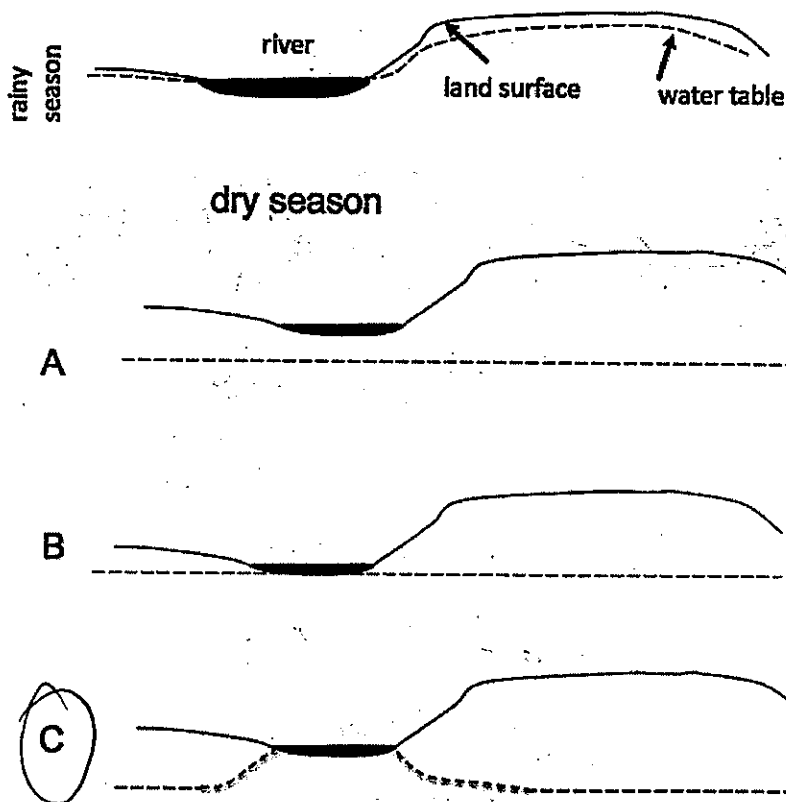
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

- 10
1. What happens when water molecules condense?
☐ a. Water molecules become larger
☒ b. Gaseous water becomes liquid water
☐ c. Hydrogen and oxygen atoms combine to form liquid water
☐ d. The temperature of water molecules decreases
 2. Which of the following is the largest freshwater reservoir
☐ a. The atmosphere
☐ b. Oceans
☒ c. Glaciers
☐ d. Lakes and streams
 3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
☐ a. Rainfall and surface runoff into the lake
☐ b. Seasonal high water from the Mississippi River
☒ c. Ground water from beneath the surface
 4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
☐ a. A= evaporation, B= deposition, C= sublimation
☒ b. A = condensation, B= precipitation, C= evaporation
☐ c. A= sublimation, B= precipitation, C= evaporation
☐ d. A = precipitation, B= freezing, C= condensation
 5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
☐ a. Liquid water from the pot condenses
☐ b. Liquid water from the pot evaporates ✓
☒ c. Water vapor from the pot condenses ✓
☐ d. Water vapor from the pot evaporates
 6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
☒ a. This is what one would predict with global warming
☐ b. This is the opposite of what one would predict with global warming
☐ c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- ☒ a. A= chemical, B= thermal, C= thermal
b. A = gravitational, B= gravitational, C= thermal
☒ c. A = gravitational, B= thermal, C= thermal
☒ d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- ☒ a. been greater
b. been less
c. remained the same
- * 10. What happens when plants respire?
- a. Plants convert biomass into energy
b. Plants convert energy into biomass
☒ c. Plants release energy

A39966164

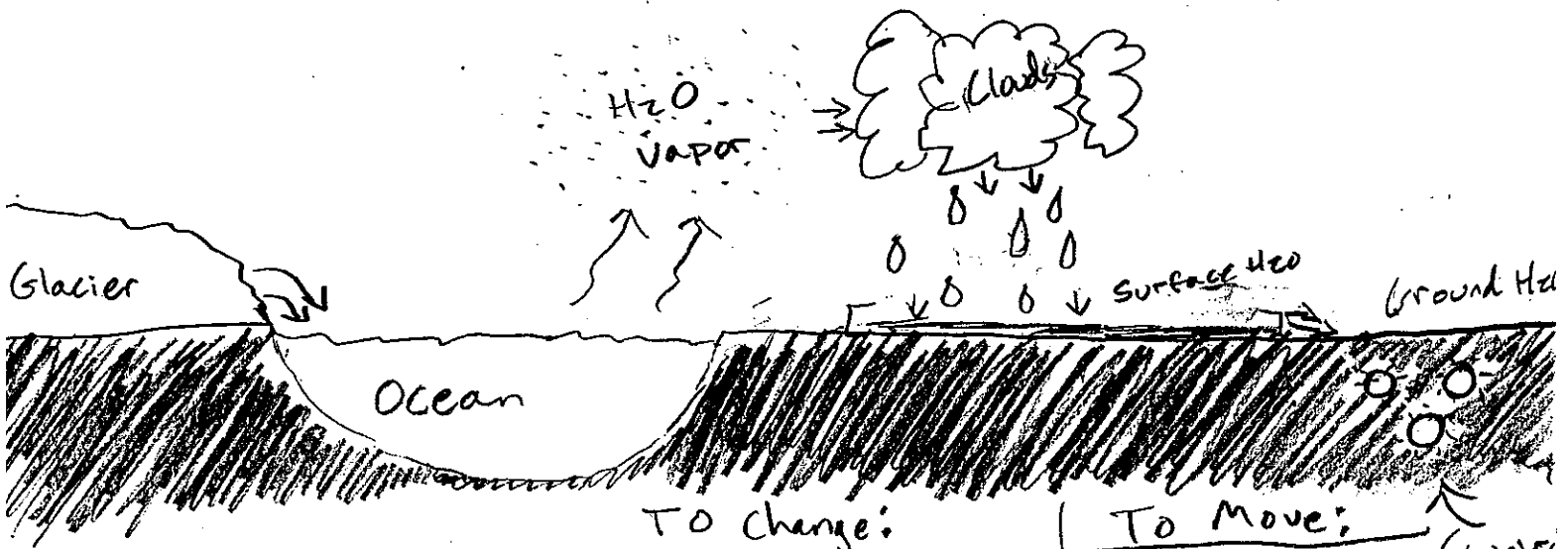
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

3

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water



Glacier → Ocean = Melting + 3
(Thermal)

Ocean → Vapor in Atmosphere = Evaporation
(Thermal)

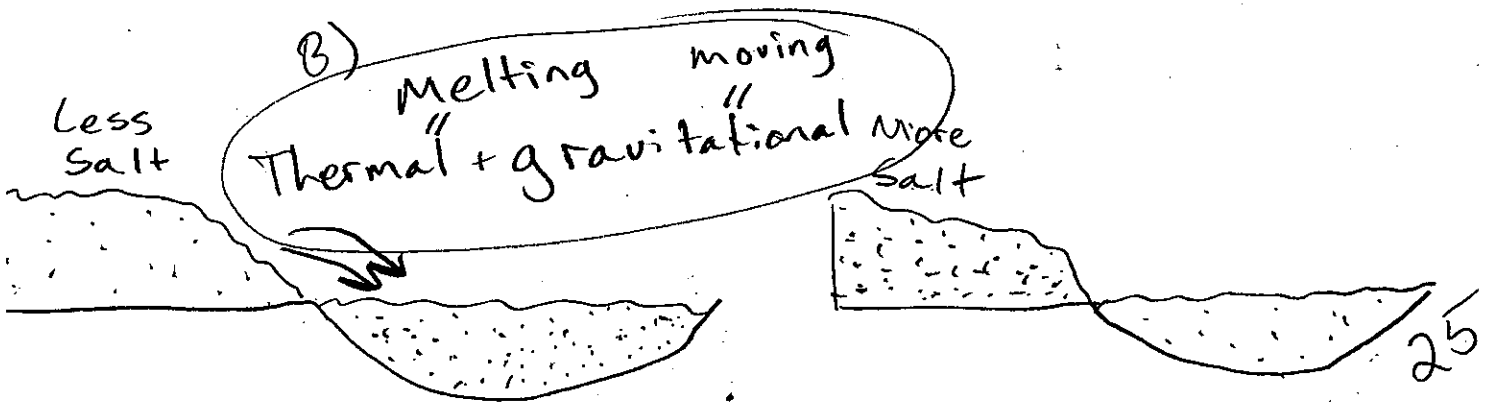
Vapor in Atmosphere → Clouds = Condensation
(Thermal)

Clouds → Surface H₂O = Precipitation
(Thermal)

Surface H₂O → Ground H₂O = Saturation
(N.A. only moves)

18

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - The energy that is causing movement or transformation of water.



A) Thermohaline circulation occurs because as glaciers freeze, they release salt into the oceans below. The salt (in mass quantity) sinks to the bottom of the ocean floor and continues to flow (with cold water; to more tropical regions where the water becomes warm and flows back to colder regions, regulating world-wide ocean temperatures. If glaciers suddenly began keeping more of the salt, the underwater current created by freezing glaciers would become weak possibly to the point that they would cease carrying

- EXTRA CREDIT (2 points) Temperature Regulating water all over the world.
- EC. How are burning wood and respiration similar?
- They both destroy matter during energy conversion
 - They both convert thermal energy into gravitational energy
 - They both convert chemical energy into thermal energy
 - They both convert kinetic energy into potential energy.

50 ~~95~~ 45
YOUR SCORE:
95

STUDENT ID #: A42100583; GROUP #: 7

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?

7

- ☐ a. Water molecules become larger
- ☒ b. Gaseous water becomes liquid water
- ☐ c. Hydrogen and oxygen atoms combine to form liquid water
- ☐ d. The temperature of water molecules decreases

2. Which of the following is the largest freshwater reservoir

- ☐ a. The atmosphere
- ☐ b. Oceans
- ☒ c. Glaciers
- ☐ d. Lakes and streams

3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?

- ☐ a. Rainfall and surface runoff into the lake
- ☒ b. Seasonal high water from the Mississippi River
- ☒ c. Ground water from beneath the surface

4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.

- ☐ a. A = evaporation, B = deposition, C = sublimation
- ☒ b. A = condensation, B = precipitation, C = evaporation
- ☐ c. A = sublimation, B = precipitation, C = evaporation
- ☐ d. A = precipitation, B = freezing, C = condensation

5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?

- ☒ a. Liquid water from the pot condenses
- ☐ b. Liquid water from the pot evaporates
- ☒ c. Water vapor from the pot condenses
- ☐ d. Water vapor from the pot evaporates

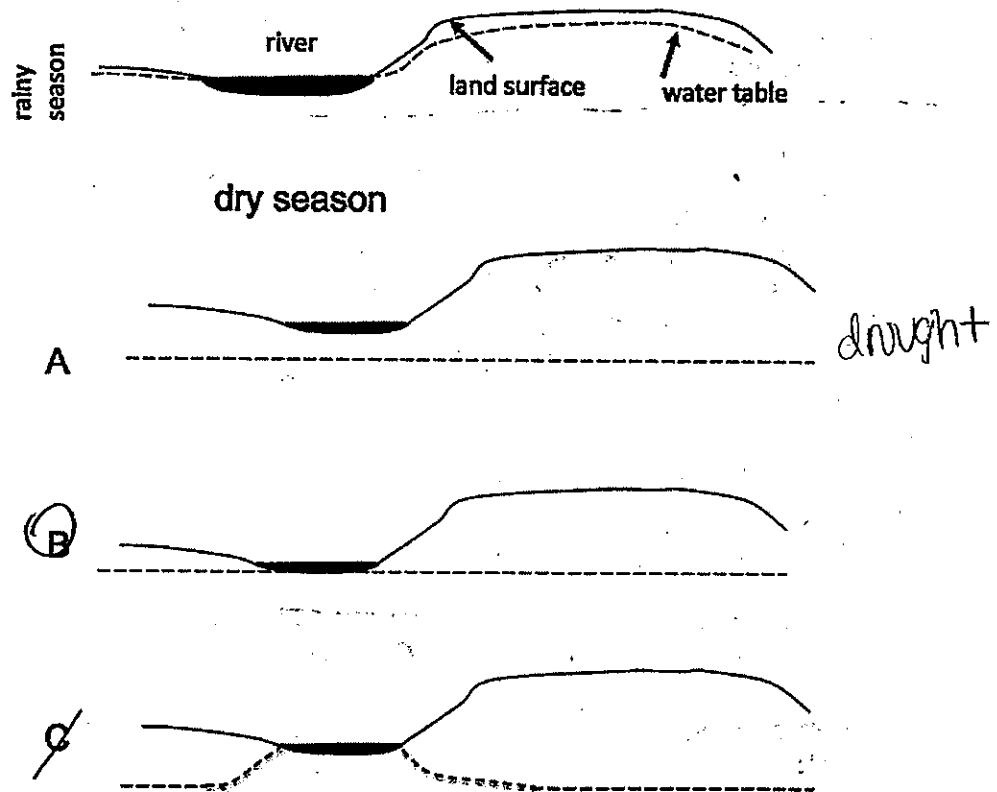
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?

- ☒ a. This is what one would predict with global warming
- ☐ b. This is the opposite of what one would predict with global warming
- ☐ c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- ☒ a. A = chemical, B = thermal, C = thermal
☐ b. A = gravitational, B = gravitational, C = thermal
☒ c. A = gravitational, B = thermal, C = thermal
☐ d. A = thermal, B = thermal, C = thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



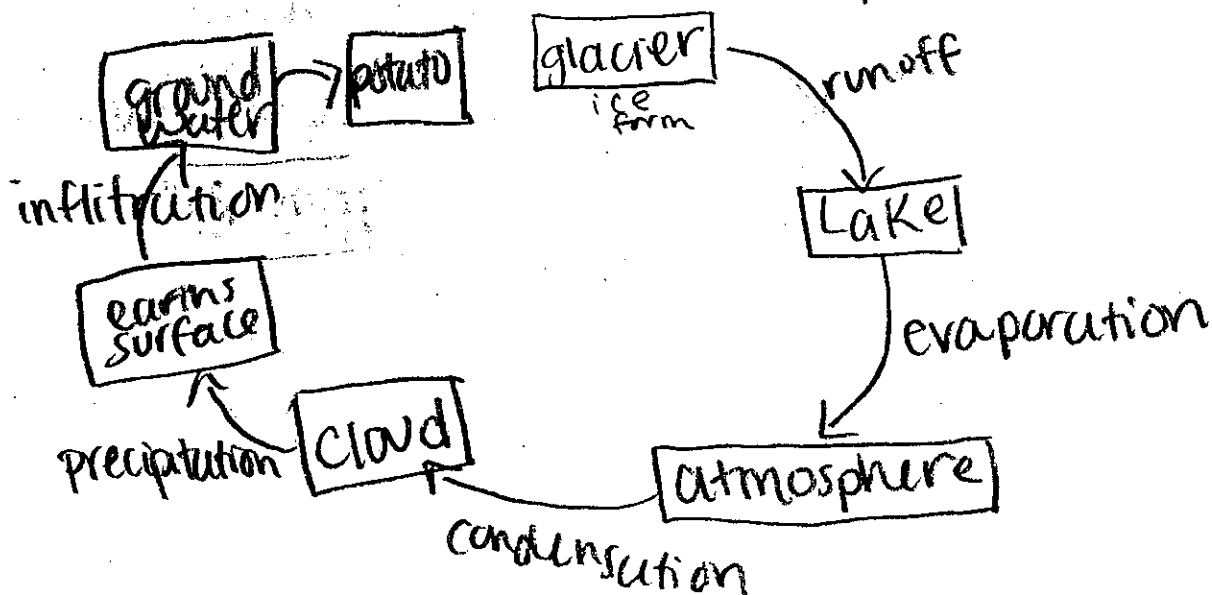
9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- ☒ a. been greater
☐ b. been less
☐ c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
b. Plants convert energy into biomass
c. Plants release energy

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water

A water molecule in a glacier is in solid form, therefore, it will need to melt into the liquid form and then by the process of runoff, the water will be transferred into a nearby lake. After spending some time in the lake, the water molecule heats up at the surface, enough to allow it to evaporate into the atmosphere. Then the water will cool down and condense to be a part of a cloud. After the cloud gets dense enough, the process of precipitation will happen, bringing the water back down to the earth's surface somewhere in a potato farm, where the water seeps in the ground. Then a potato plant uses its roots to suck the water up, and then the water molecule will become a part of the potato.



22

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water. ?

if polar ice contained more salt than the surrounding seawater, then thermohaline circulation would change.

The Oceans right now circulate based on density and the amount of salt in the water plays a huge part of the process. Having more salt in the water causes it to be more dense. So when polar ice freezes, it leaves the surrounding water with more salt, causing it to be more dense and then sink down, then the less dense water will rise up to the surface.

If the polar ice were to freeze with having more salt than the surrounding water, the circulation would slow down and eventually stop, because the water on the surface would already be less dense and therefore wouldn't sink down.

15

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy.
- They both convert kinetic energy into potential energy.

35 39

YOUR SCORE:

74

STUDENT ID #: A42326587; GROUP #: 7 ⁷

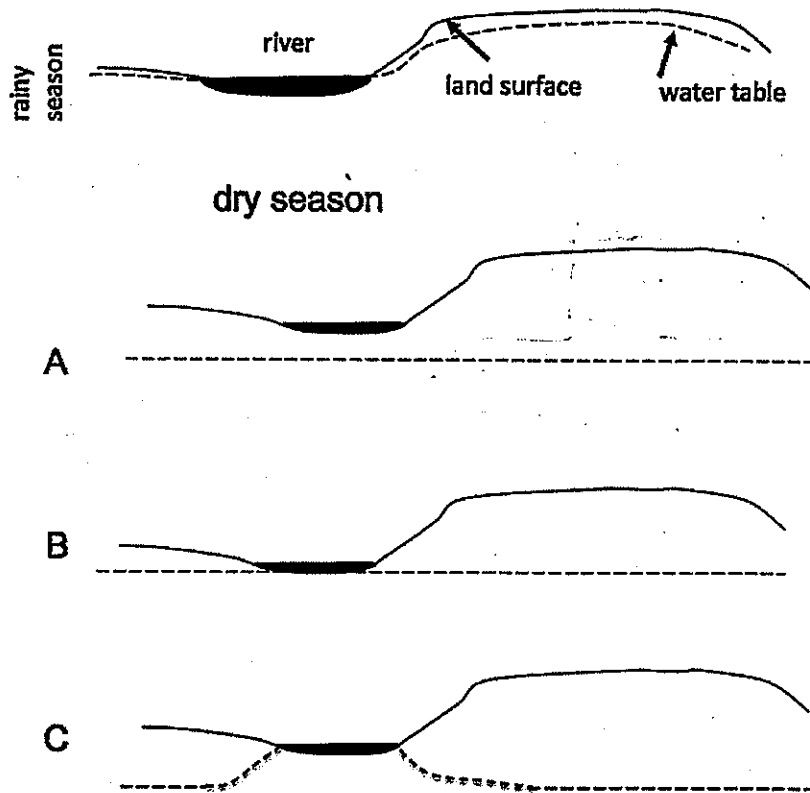
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?
a. Water molecules become larger
b. Gaseous water becomes liquid water
c. Hydrogen and oxygen atoms combine to form liquid water
d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
a. The atmosphere
b. Oceans
c. Glaciers
d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
a. Rainfall and surface runoff into the lake
b. Seasonal high water from the Mississippi River
c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of cond. A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
a. A= evaporation, B= deposition, C= sublimation
b. A = condensation, B= precipitation, C= evaporation
c. A= sublimation, B= precipitation, C= evaporation
d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
a. Liquid water from the pot condenses
b. Liquid water from the pot evaporates
c. Water vapor from the pot condenses
d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
a. This is what one would predict with global warming
b. This is the opposite of what one would predict with global warming
c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- ☒ c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?

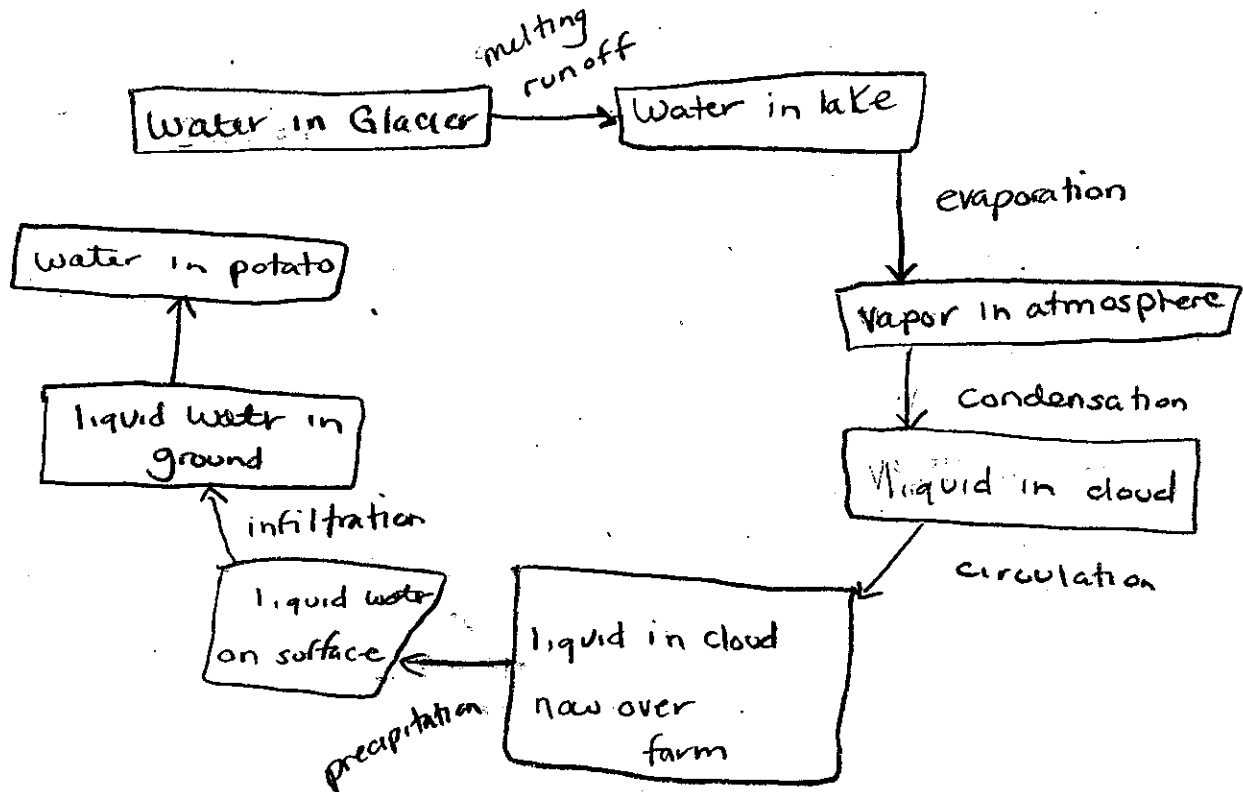


9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

A 42326687

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- a. Water phase at each step in the journey
 - b. A name for each process that moves or transforms water

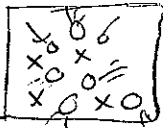
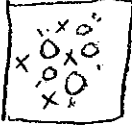


25

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

Circulation occurs due to changes of energy. When water goes to ice, the molecules are forming greater bonds and their movement lessens. When there are changes in temperatures, there are changes in mass.?

Liquid Water	Polar Ice (regular H ₂ O)
	

Because ice contains less salt than seawater it is able to float.

If there was more salt in the ice than the ice would instead sink rather than float due to greater density in the ice.

The thermohaline circulation would alter because instead of thermal energy rises from the bottom of seawater to melt the ice,?

the ice would be at the bottom and thermal energy would have remained at the surface where ice usually is. This action which is similar ~~to Hadley cells~~ would not take place the same anymore.

EXTRA CREDIT (2 points)

✓ EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- ③ They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

46 37
YOUR SCORE:
82

STUDENT ID #: A42501575; GROUP #: 7

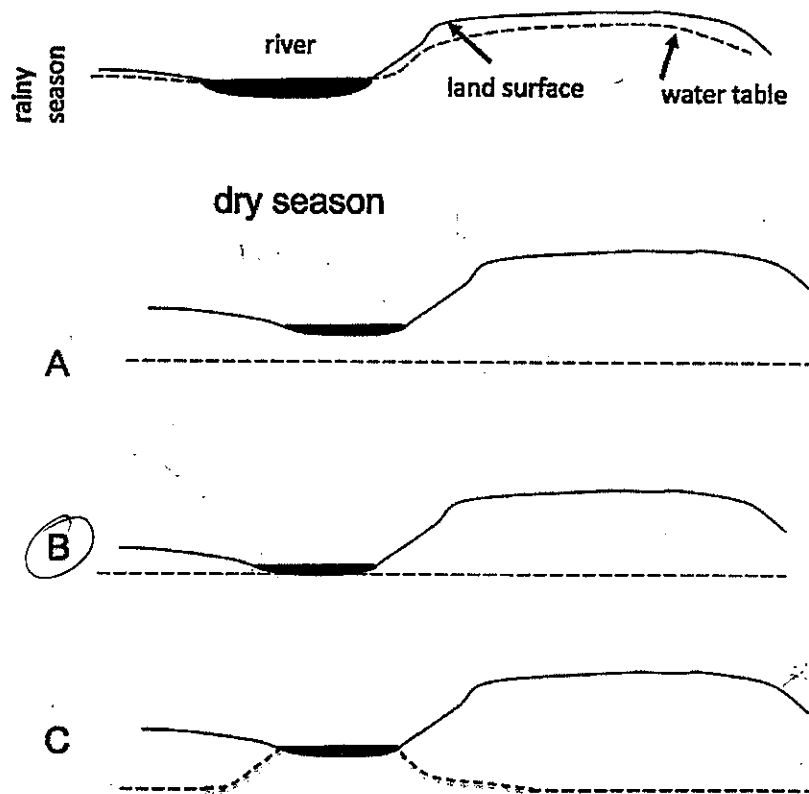
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 8
 - a. Water molecules become larger
 - ☒ b. Gaseous water becomes liquid water
 - c. Hydrogen and oxygen atoms combine to form liquid water
 - d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
 - a. The atmosphere
 - b. Oceans
 - ☒ c. Glaciers
 - d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
 - ☒ a. Rainfall and surface runoff into the lake
 - b. Seasonal high water from the Mississippi River
 - c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
 - a. A= evaporation, B= deposition, C= sublimation
 - ☒ b. A = condensation, B= precipitation, C= evaporation
 - c. A= sublimation, B= precipitation, C= evaporation
 - d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
 - a. Liquid water from the pot condenses
 - b. Liquid water from the pot evaporates
 - ☒ c. Water vapor from the pot condenses
 - d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
 - ☒ a. This is what one would predict with global warming
 - b. This is the opposite of what one would predict with global warming
 - c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- Ⓒ A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:

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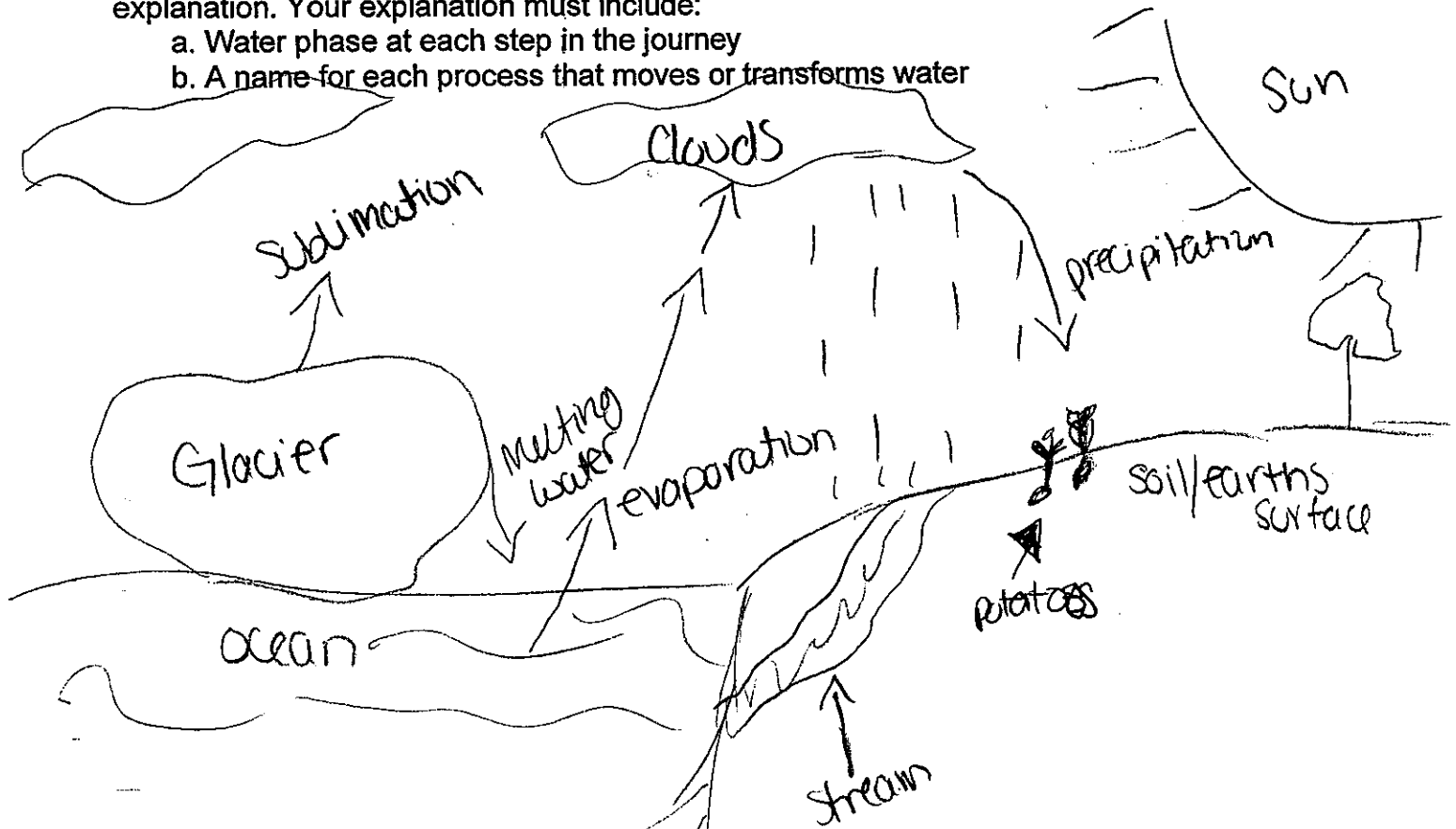
10. What happens when plants respire?

- a. Plants convert biomass into energy
- b. Plants convert energy into biomass
- Ⓒ Plants release energy

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

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Solid water from a glacier can sublimate (solid to vapor) into the atmosphere, or melt using thermal energy into the ocean. The water from the ocean evaporates into the clouds, which is then followed by precipitation onto the surface and can be runoff, or infiltrate into the soil where the potatoes are growing.

miss
step

20

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- a. Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - b. The energy that is causing movement or transformation of water.

Circulation happens because warm-air is moved upward
? the atmosphere creating winds/currents that cause
circulation of warmer water in the ocean, warm water
is in the top layer of the ocean, which when it evaporates
leaves behind the salt content. The colder, saltier water is denser and
sinks to the bottom. If polar ice contains more salt than surrounding
seawater, it would be denser and sink to the bottom. +?

Ocean

8
10

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- a. They both destroy matter during energy conversion
- b. They both convert thermal energy into gravitational energy
- c. They both convert chemical energy into thermal energy
- d. They both convert kinetic energy into potential energy.

40 32

YOUR SCORE:

72

STUDENT ID #: A42135792; GROUP #: 7

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

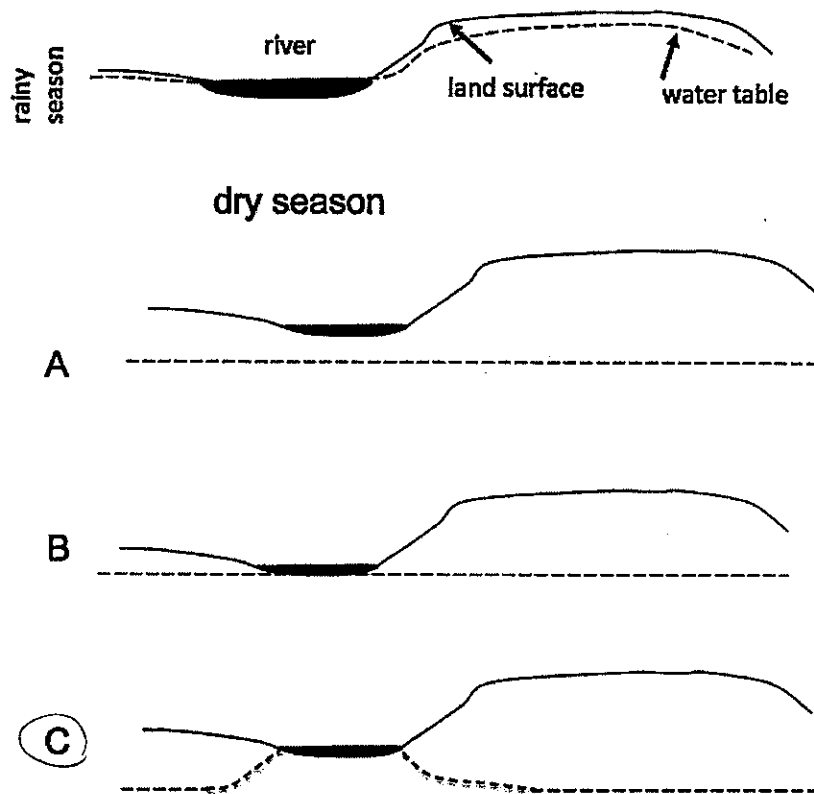
- ✓1. What happens when water molecules condense? 9
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 - ☒ Glaciers
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 - ☒ A = condensation, B= precipitation, C= evaporation
 - A= sublimation, B= precipitation, C= evaporation
 - A = precipitation, B= freezing, C= condensation
- ✓5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
- ~~a.~~ Liquid water from the pot condenses
 - ~~b.~~ Liquid water from the pot evaporates
 - ☒ Water vapor from the pot condenses
 - d. Water vapor from the pot evaporates
- ✓6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
- ☒ This is what one would predict with global warming
 - This is the opposite of what one would predict with global warming
 - Predictions about global warming do not address global precipitation.

as temperatures rise there is an increase of RT in the water cycle.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
b. A = gravitational, B= gravitational, C= thermal
c. A = gravitational, B= thermal, C= thermal
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8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:

- a. been greater
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ice		liquid
0.9	<	1.0
?	>	?

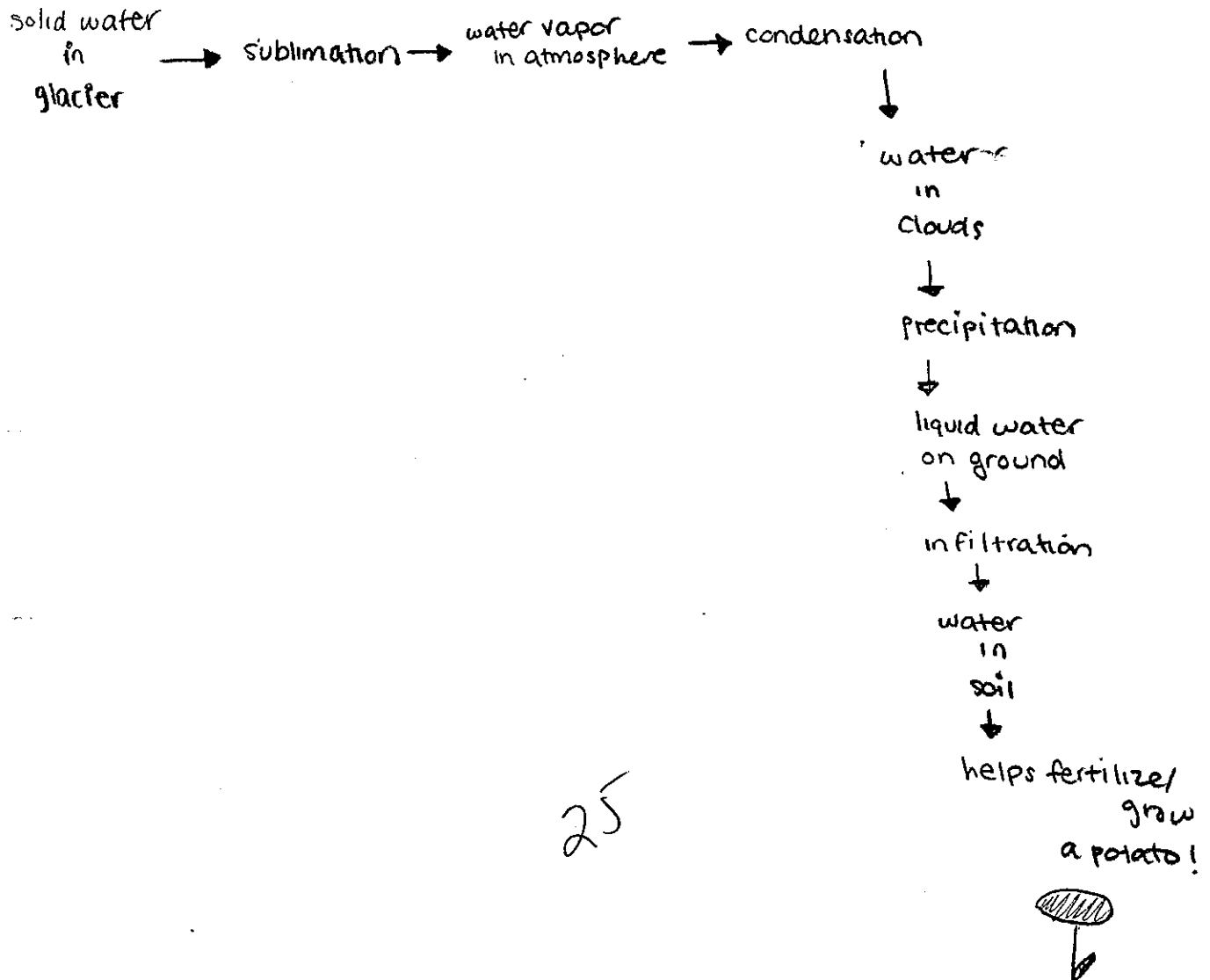
10. What happens when plants respire?
a. Plants convert biomass into energy
b. Plants convert energy into biomass
c. Plants release energy

A42135792

SHORT ANSWER. 25 points each (50 points total)

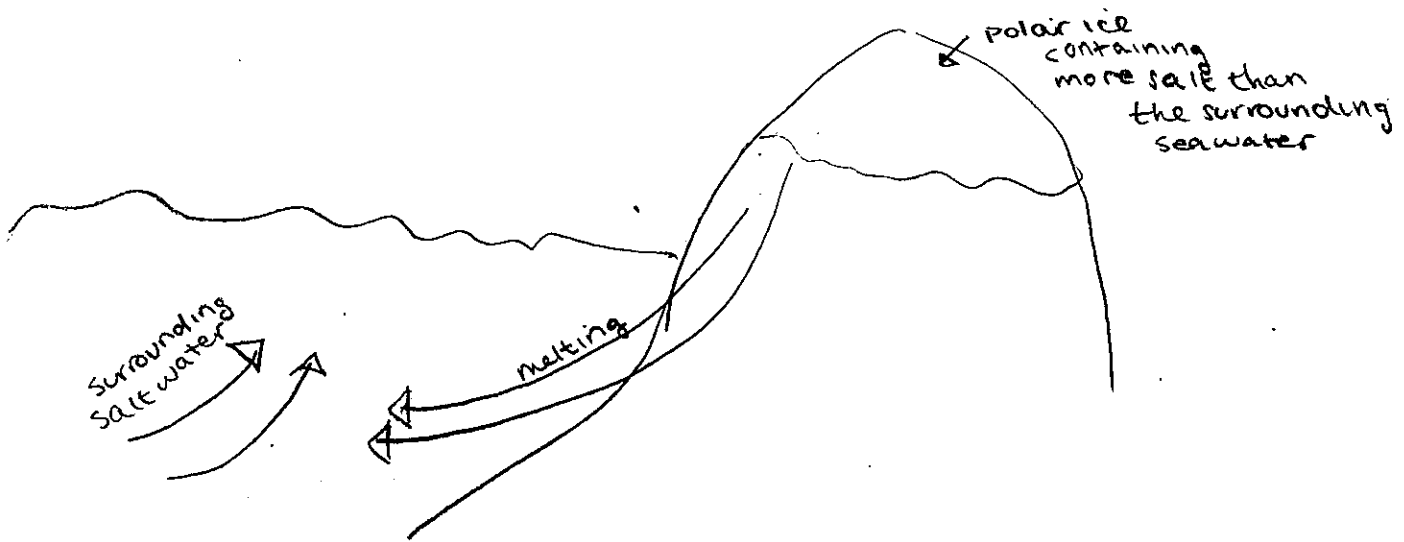
1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water



2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water. — ~~gravitational~~ *ther mal*



25 the seawater from which the polar ice freezes would rise if there was an increase in the amount of salt in the polar ice. This would make colder water rise because it would be less dense than the polar ice containing more salt. The thermohaline circulation in oceans would be less likely to bring warmer waters to the poles and cooler water to the equator. The energy causing movement of water is thermal energy! It melts the ice as it heats because the molecules are heated and also changes the density making the circulation occur. As molecules are heated they become less dense and rise whereas molecules that are cooled become more dense and fall.

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

45 52

YOUR SCORE:

97

STUDENT ID #: A42311768; GROUP #: 8

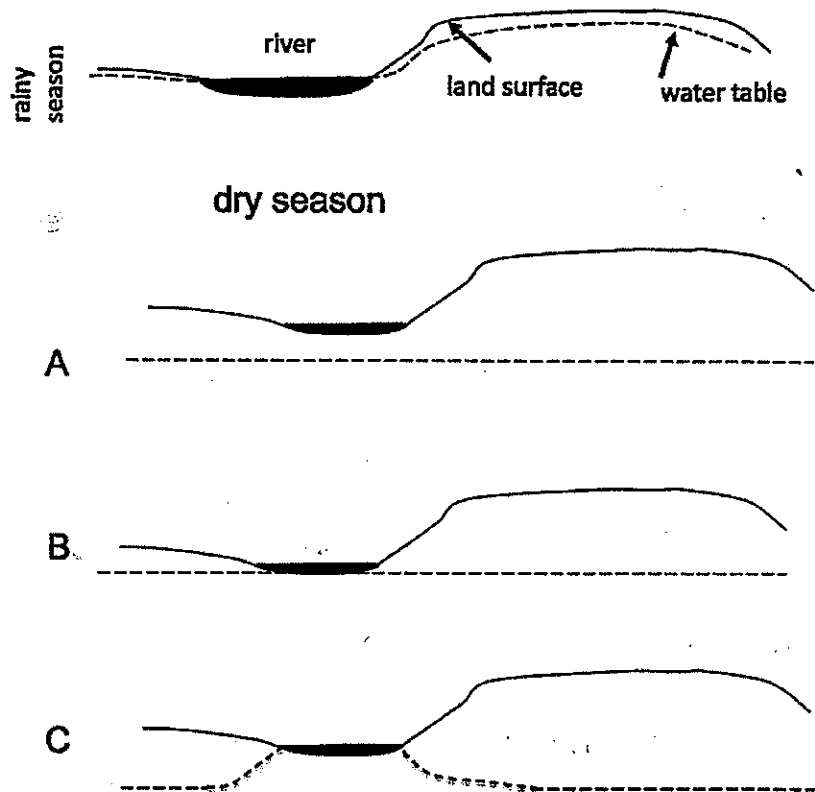
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 7
- Water molecules become larger
 - Gaseous water becomes liquid water
 - Hydrogen and oxygen atoms combine to form liquid water
 - The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
- The atmosphere
 - Oceans
 - Glaciers
 - Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
- Rainfall and surface runoff into the lake
 - Seasonal high water from the Mississippi River
 - Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
- A= evaporation, B= deposition, C= sublimation
 - A = condensation, B= precipitation, C= evaporation
 - A= sublimation, B= precipitation, C= evaporation
 - A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
- Liquid water from the pot condenses
 - Liquid water from the pot evaporates
 - Water vapor from the pot condenses
 - Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
- This is what one would predict with global warming
 - This is the opposite of what one would predict with global warming
 - Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- Water phase at each step in the journey
 - A name for each process that moves or transforms water

The water from the glacier would melt causing it to become a part of the water reservoir. The water would then be evaporated from the reservoir and become a part of the clouds and within the clouds, tiny droplets of water would condense and then precipitation would occur and the water would be absorbed by the soil and be what is considered ground water. Then as the potato plant grows, it grows with the water need from the soil which started as the glacier.

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- a. Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - b. The energy that is causing movement or transformation of water.

The circulation would change because as mentioned in the question the polar ice contained more

salt than the surrounding sea water. With excess amounts of salt in the water it would cause the movement of water to decrease because the water would be more dense.

5 Gravitational energy would cause this to happen because with increase density it also causes decreased movement. The polar ice would also freeze faster due to high salt levels.

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- a. They both destroy matter during energy conversion
- b. They both convert thermal energy into gravitational energy
- ☒ c. They both convert chemical energy into thermal energy
- d. They both convert kinetic energy into potential energy.

35 22

YOUR SCORE:

57

STUDENT ID #: 438000027; GROUP #: 8

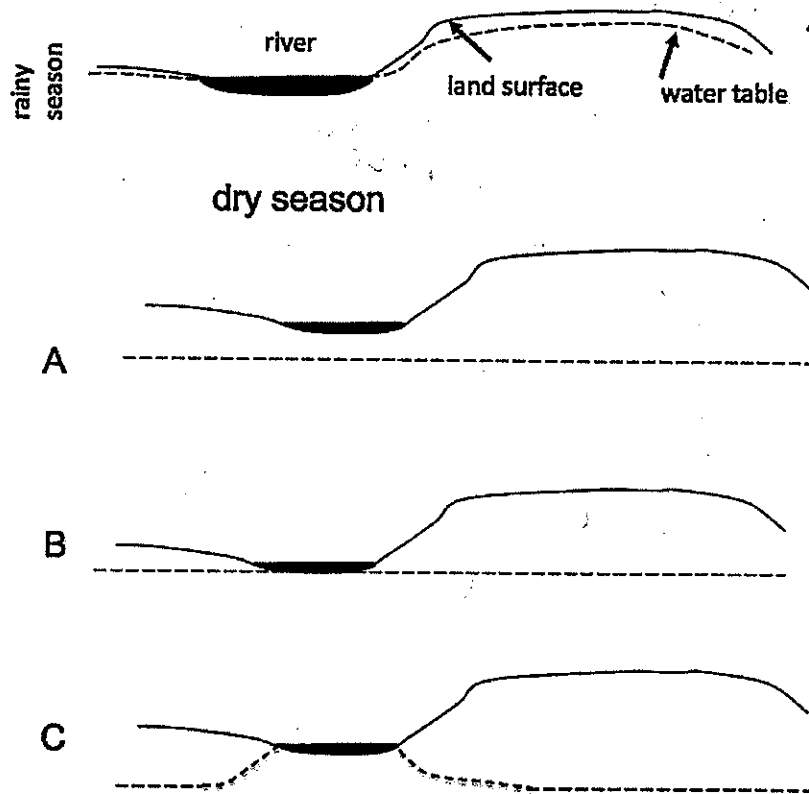
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 8
- Water molecules become larger
 - ☒ Gaseous water becomes liquid water
 - Hydrogen and oxygen atoms combine to form liquid water
 - The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
- The atmosphere
 - Oceans
 - ☒ Glaciers
 - Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
- ☒ Rainfall and surface runoff into the lake
 - Seasonal high water from the Mississippi River
 - Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
- A = evaporation, B = deposition, C = sublimation
 - ☒ A = condensation, B = precipitation, C = evaporation
 - A = sublimation, B = precipitation, C = evaporation
 - A = precipitation, B = freezing, C = condensation
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- Liquid water from the pot condenses
 - Liquid water from the pot evaporates
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- ☒ This is what one would predict with global warming
 - This is the opposite of what one would predict with global warming
 - Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?

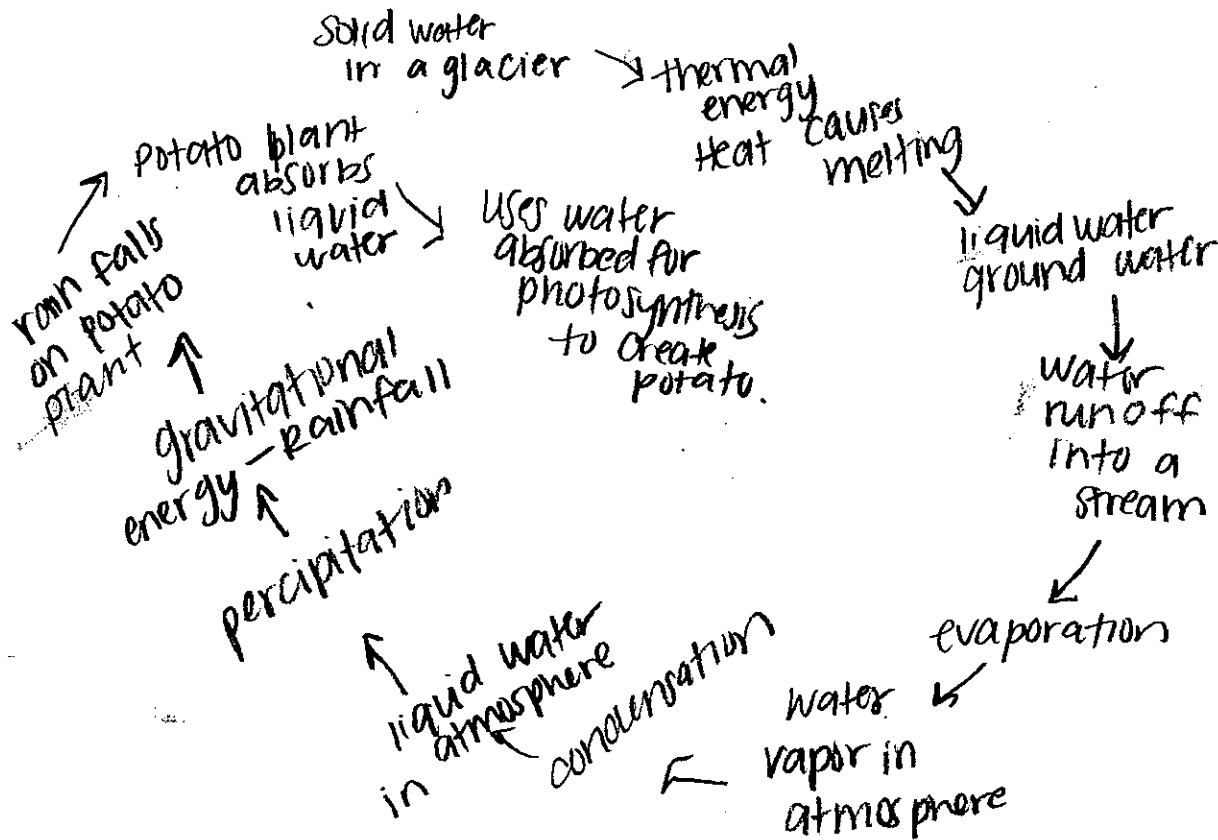


9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 - b. been less
 - c. remained the same
- ice density .9
water density 1.0
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

A43866027

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- Water phase at each step in the journey
 - A name for each process that moves or transforms water



25

2. When ice forms from seawater, the ice contains less salt than the remaining water.

Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

If more salt was in the ice than in the surrounding water it is very likely that the ice caps would have even more density since salt water is more dense because of all the dissolved particles in it. The more particles the more ~~the~~ dense it is. So then it would sink. The bottom of the ocean is cooler than the top of the ocean water (Heat rises as it cools it falls down) so the circulation within the water mixes the particles and dissolved ions around in the water. This is thermal energy that causes the warming and cooling but gravitational energy causes the circulation because the more dense, cooler water is weighed down more than the less dense warmer water, until that warmer water cools down? and is brought to the bottom by gravitational energy too.

10

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- ☒ They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

40 37

YOUR SCORE:

77

STUDENT ID #: A40833474; GROUP #: 8

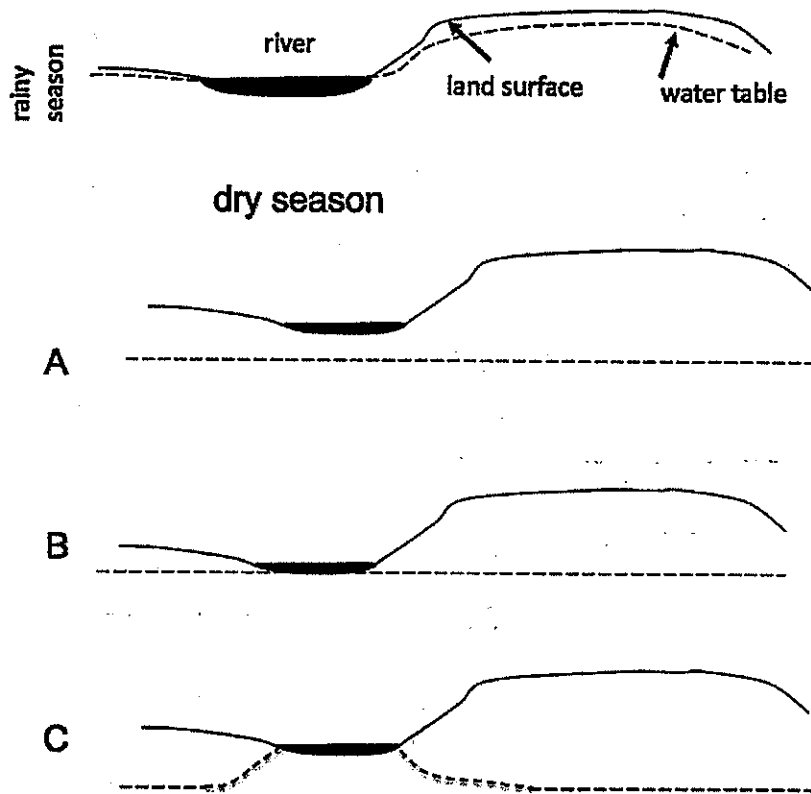
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?
a. Water molecules become larger
b. Gaseous water becomes liquid water
c. Hydrogen and oxygen atoms combine to form liquid water
d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
a. The atmosphere
b. Oceans
c. Glaciers
d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
a. Rainfall and surface runoff into the lake
b. Seasonal high water from the Mississippi River
c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
a. A= evaporation, B= deposition, C= sublimation
b. A = condensation, B= precipitation, C= evaporation
c. A= sublimation, B= precipitation, C= evaporation
d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
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c. Water vapor from the pot condenses
d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
a. This is what one would predict with global warming
b. This is the opposite of what one would predict with global warming
c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy. CC

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



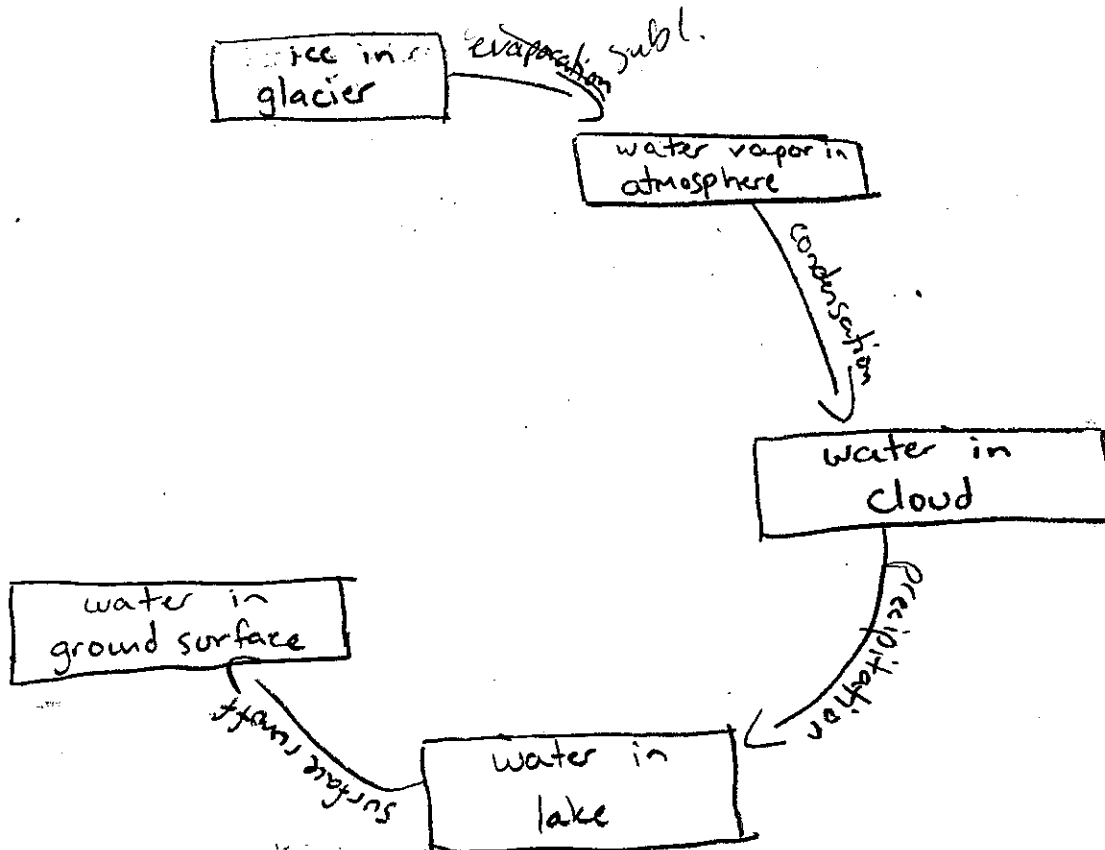
9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

A40833474

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water



Once the water is in the ground, it then saturates the potato, and completes the cycle from glacier to potato.

- The process of thermohaline circulation exists because salt water is more dense than regular water, and the saltier water sinks, while the fresh water rises. If polar ice actually contained more salt than the surrounding seawater, thermohaline circulation would cease to exist because buoyancy would cause the ice to sink because it would be denser, and the remaining water would be less salty and stay near the surface. Thermohaline circulation would no longer provide heat to the polar regions because the cold water would never circulate out, and the warm equatorial water would not be able to circulate in. ~~20~~ 20

a. They both destroy matter during energy conversion
b. They both convert thermal energy into gravitational energy
c. They both convert chemical energy into thermal energy
d. They both convert kinetic energy into potential energy.

35 40

YOUR SCORE:

75

STUDENT ID #: A39223581; GROUP #: 8

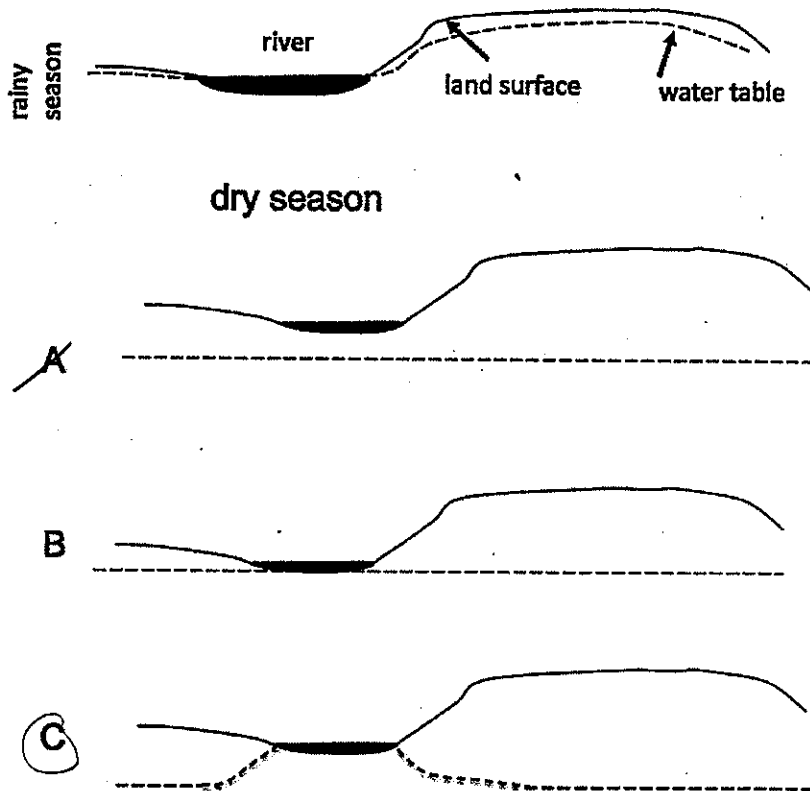
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 9
 - ☐ a. Water molecules become larger
 - ☒ b. Gaseous water becomes liquid water
 - ☐ c. Hydrogen and oxygen atoms combine to form liquid water
 - ☐ d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
 - ☒ a. The atmosphere
 - ☐ b. Oceans
 - ☐ c. Glaciers
 - ☐ d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
 - ☐ a. Rainfall and surface runoff into the lake
 - ☒ b. Seasonal high water from the Mississippi River
 - ☐ c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
 - a. A= evaporation, B= deposition, C= sublimation
 - ☒ b. A = condensation, B= precipitation, C= evaporation
 - ☐ c. A= sublimation, B= precipitation, C= evaporation
 - ☐ d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
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 - ☐ b. Liquid water from the pot evaporates
 - ☒ c. Water vapor from the pot condenses
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7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

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b. A =gravitational, B= gravitational, C= thermal
c. A = gravitational, B= thermal, C= thermal
d. A= thermal, B= thermal, C= thermal

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- a. been greater
b. been less
c. remained the same

Water = more dense

10. What happens when plants respire?

- a. Plants convert biomass into energy
b. Plants convert energy into biomass
c. Plants release energy

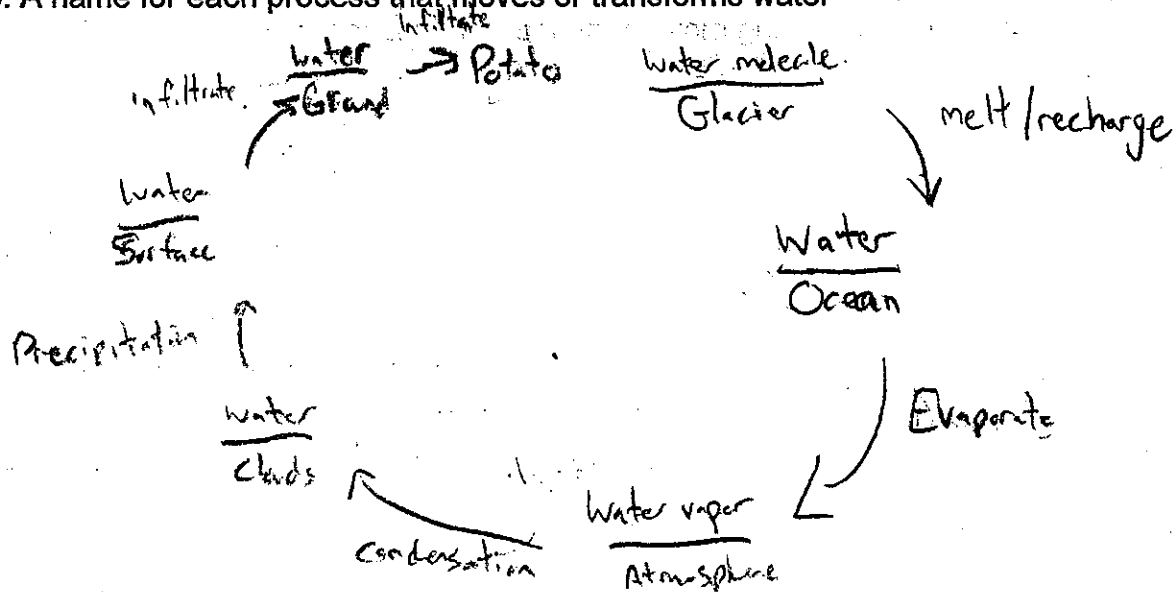
CO₂ → O₂

A3922 3581

SHORT ANSWER. 25 points each (50 points total)

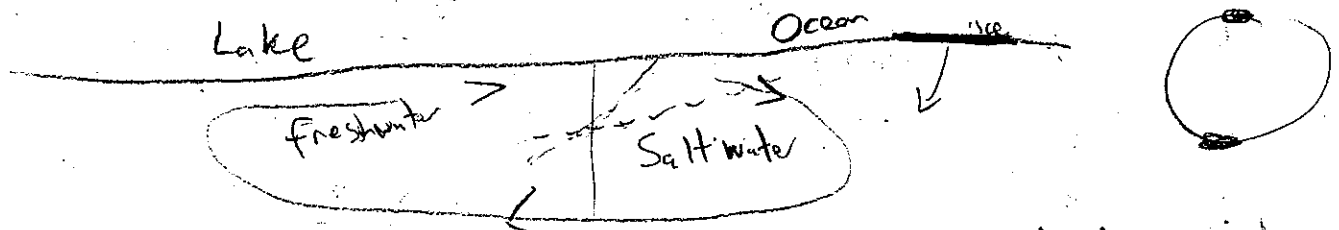
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- A name for each process that moves or transforms water



2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.



The thermohaline circulation occurs because saltwater, which is more dense than freshwater, flows underneath freshwater and then cycles as warm water heats up and rises back to the surface when less dense than colder water. This is caused by chemical potential energy being transformed to thermal energy. The thermohaline cycle would change by the ice not staying afloat in the water. Since it would be more dense, and the polar ice would shrink, leading to an influx of seawater.

5

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- ☒ They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

45 30

YOUR SCORE:

75

STUDENT ID #: A43425519; GROUP #: 30

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?

- ☐ a. Water molecules become larger
☒ b. Gaseous water becomes liquid water
☐ c. Hydrogen and oxygen atoms combine to form liquid water
☐ d. The temperature of water molecules decreases

6

2. Which of the following is the largest freshwater reservoir

- ☐ a. The atmosphere
☐ b. Oceans
☒ c. Glaciers
☐ d. Lakes and streams

3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?

- ☒ a. Rainfall and surface runoff into the lake
☐ b. Seasonal high water from the Mississippi River
☐ c. Ground water from beneath the surface

011

4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.

- ☐ a. A= evaporation, B= deposition, C= sublimation
☒ b. A = condensation, B= precipitation, C= evaporation
☐ c. A= sublimation, B= precipitation, C= evaporation
☐ d. A = precipitation, B= freezing, C= condensation

5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?

- ☐ a. Liquid water from the pot condenses
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☐ c. Water vapor from the pot condenses
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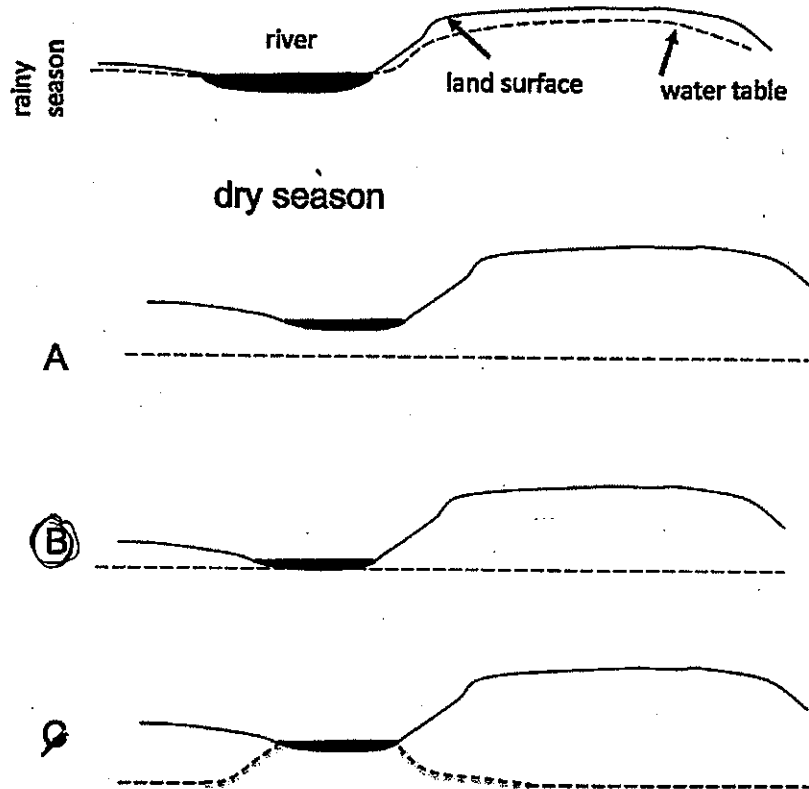
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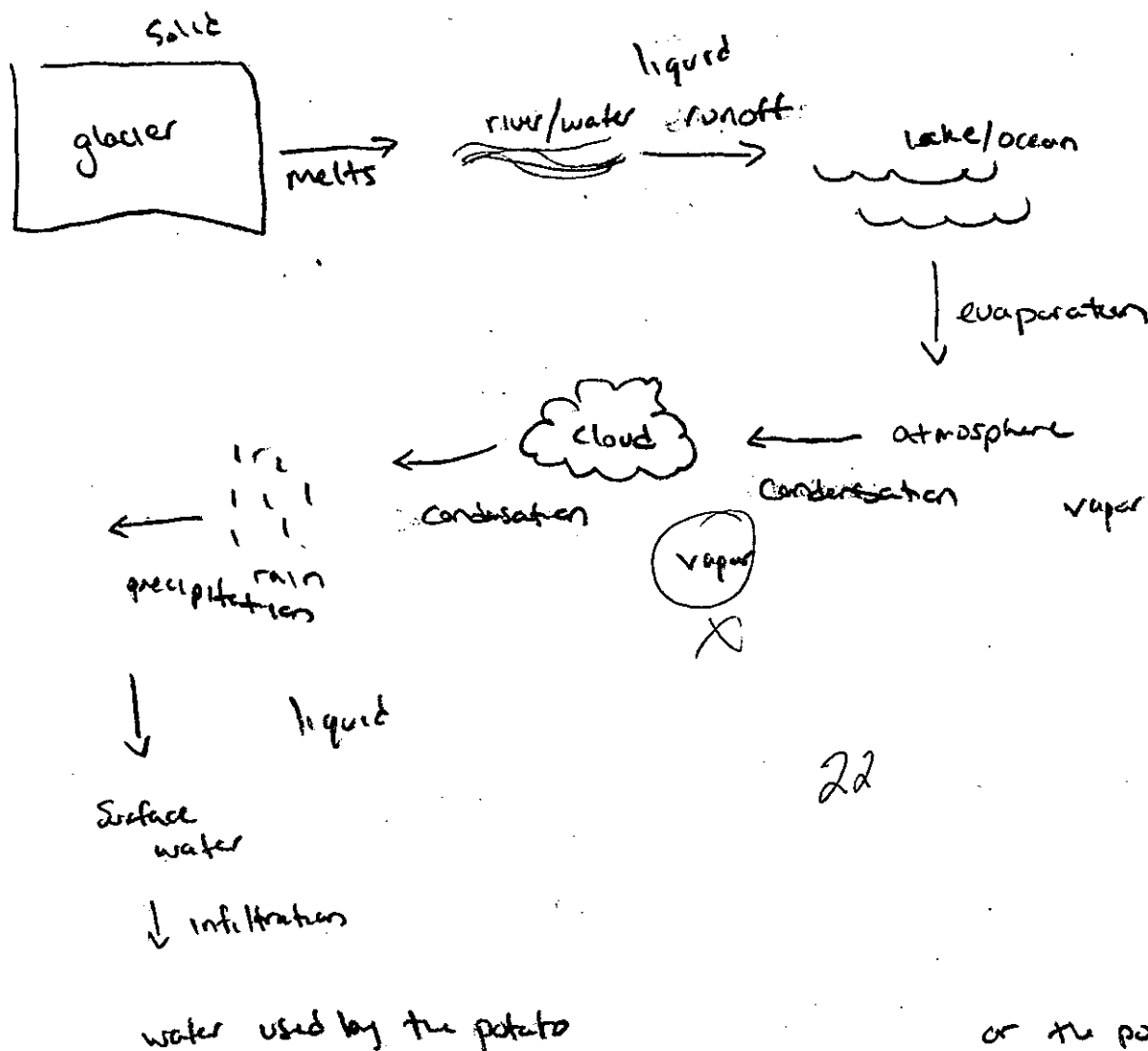
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9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- ~~a.~~ been greater
☒ b. been less
~~c.~~ remained the same
10. What happens when plants respire?
- ~~a.~~ Plants convert biomass into energy
☒ b. Plants convert energy into biomass
☒ c. Plants release energy

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- Water phase at each step in the journey
 - A name for each process that moves or transforms water



or the potato
itself can soak
up the water

The glacier melts causing a river. The river runoff goes into a lake or ocean, which then evaporates into the atmosphere. Then the vapor condenses to form clouds, which then condenses to form tiny water droplets. Then it precipitates causing rain, which then hits the surface causing surface water. Then that water infiltrates into the ground. that water can be pumped and used for the potato

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- a. Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - b. The energy that is causing movement or transformation of water.

When the seawater evaporates it leaves the salt behind causing the salt count in the ocean to be greater. If the polar ice contained more salt, there would be less salt in the ocean. Therefore, the salt would become more dense? than the water causing the ice to sink beneath the seawater. gravitational energy is pulling down on the more dense ice caps, 10

The thermohaline process would be thrown off because the change in the water density would cause the water to be warmer throwing off the current path it is on now.

The gravitational energy is playing the biggest role by pulling down the more dense ice caps.

It is more dense with the ions in the ice, than the more pure water.

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- a. They both destroy matter during energy conversion
- b. They both convert thermal energy into gravitational energy
- c. They both convert chemical energy into thermal energy
- d. They both convert kinetic energy into potential energy.

30 34

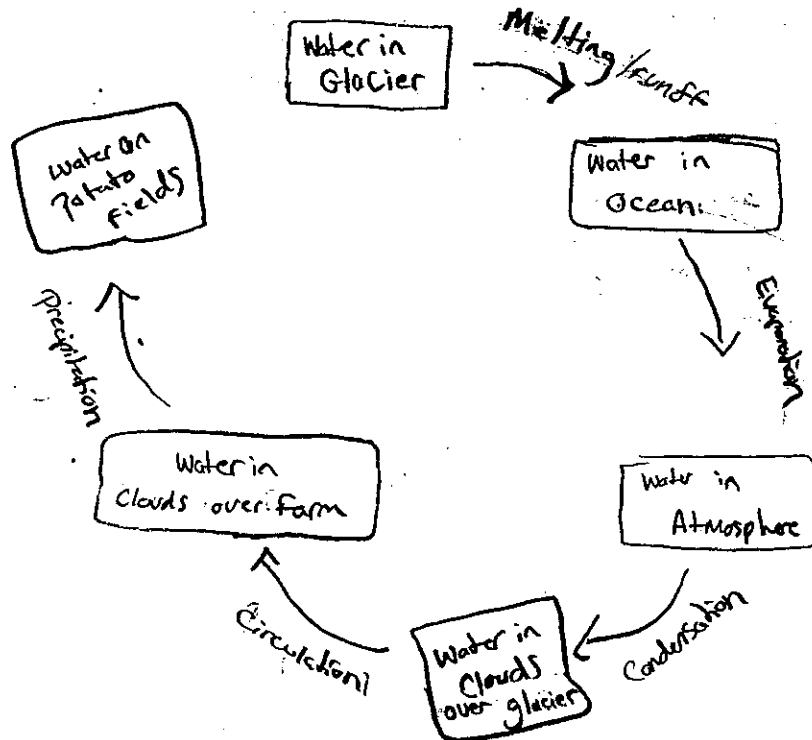
YOUR SCORE:

64

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water



- The water originally in the glacier would melt/runoff into a large ocean of water. Then, the water would evaporate into the atmosphere, and condense into the clouds. After circulation, the clouds will now be over a potato farm. Once precipitation occurs, rain water will land on the potato field and water the plants.

A43425519

ISP 203A: GLOBAL CHANGE

EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

4

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- a. Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - b. The energy that is causing movement or transformation of water.

Thermohaline circulation would change because of the density of objects. Circulation occurs because the warm and cold molecules in the ocean water are constantly moving and circulating through the ocean. Warm water molecules are less dense. If a polar ice contained more salt than the surrounding water, it would most likely sink the ice cap. The cap would be less dense than the water and not be able to stay afloat. The more salt in ice, the less dense it would be. This could cause circulation to change because thermal energy changes would cause change in temperature of the water. how?

5

EXTRA CREDIT (2 points)

- 2 EC. How are burning wood and respiration similar?
- a. They both destroy matter during energy conversion
 - b. They both convert thermal energy into gravitational energy
 - c. They both convert chemical energy into thermal energy
 - d. They both convert kinetic energy into potential energy.

35 30

YOUR SCORE:

65

STUDENT ID #: A41650757; GROUP #: 9

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 6
☒ a. Water molecules become larger
☐ b. Gaseous water becomes liquid water
☐ c. Hydrogen and oxygen atoms combine to form liquid water
☒ d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
☒ a. The atmosphere
☒ b. Oceans
☐ c. Glaciers
☐ d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
☐ a. Rainfall and surface runoff into the lake
☒ b. Seasonal high water from the Mississippi River
☐ c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
a. A= evaporation, B= deposition, C= sublimation
☒ b. A = condensation, B= precipitation, C= evaporation
c. A= sublimation, B= precipitation, C= evaporation
d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
a. Liquid water from the pot condenses
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c. Water vapor from the pot condenses
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6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
a. This is what one would predict with global warming
b. This is the opposite of what one would predict with global warming
☒ c. Predictions about global warming do not address global precipitation.

A41650757

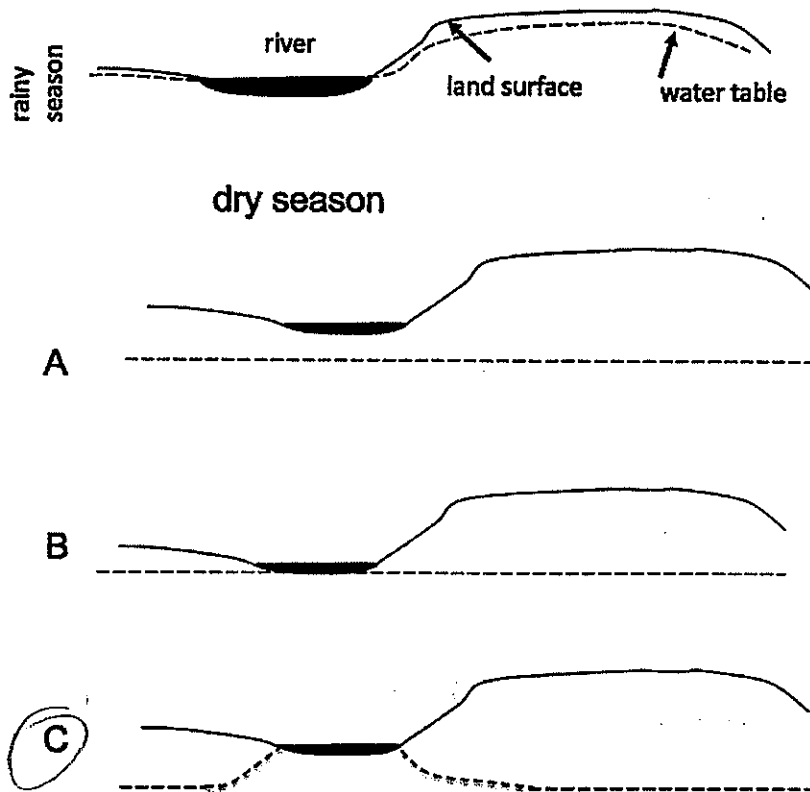
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

2

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
b. A = gravitational, B= gravitational, C= thermal
c. A = gravitational, B= thermal, C= thermal
d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?

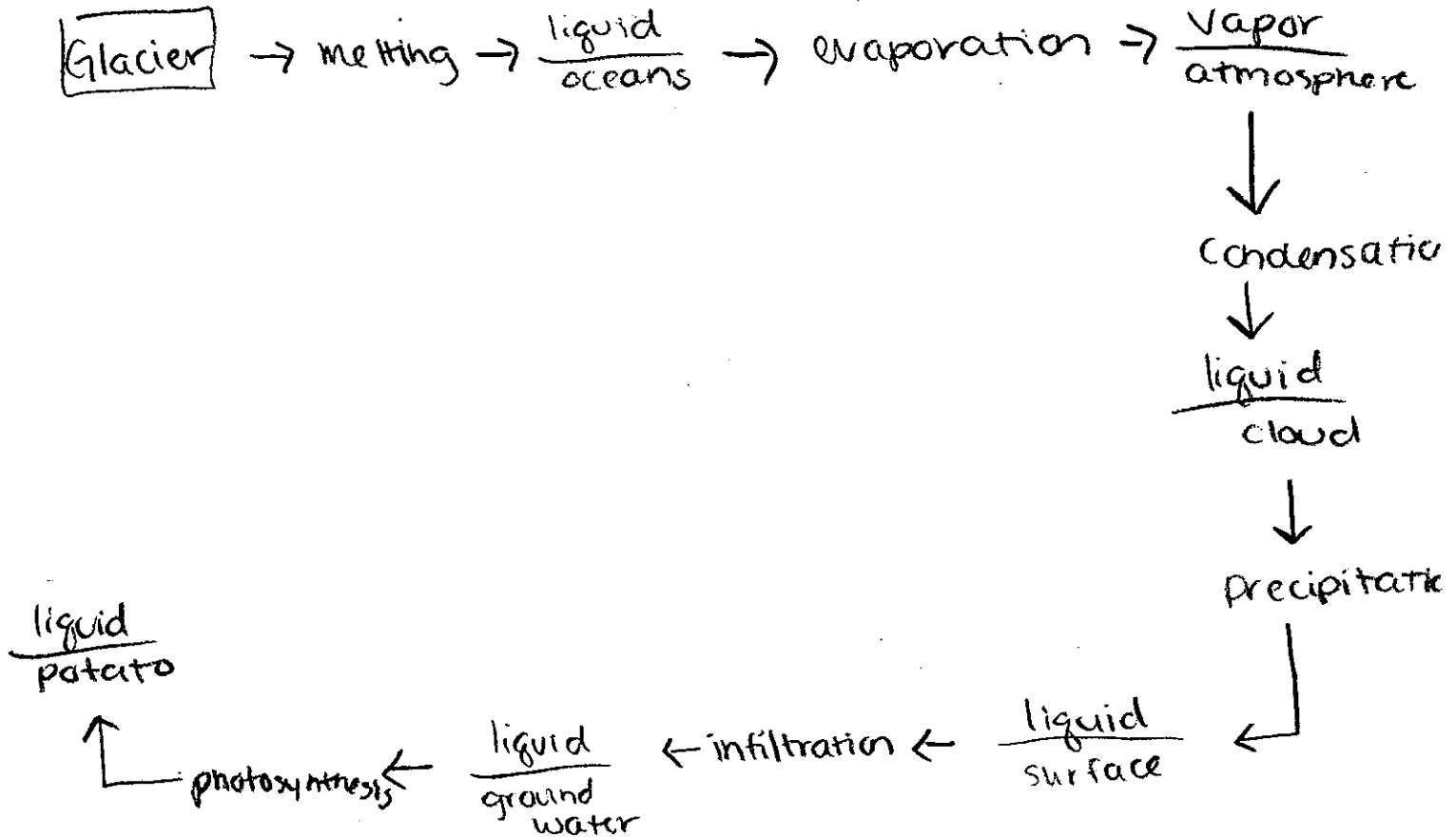


9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
b. been less
c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
b. Plants convert energy into biomass
c. Plants release energy

A41650757

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- Water phase at each step in the journey
 - A name for each process that moves or transforms water



25

Salt H₂O sinks

A41650757

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

4

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- a. Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - b. The energy that is causing movement or transformation of water.

10 The density of the water is affected by its salinity and causes the water to sink or rise. Salt water sinks because of its density. Warm water is circulated throughout regions of the world. If the polar ice had more salt than the surrounding water then evaporation from the glaciers would increase the salt going into the atmosphere which would slow the the circulation because temperatures would change in polar regions slowing the processes that drive circulation.

The sea level would rise making the temperatures different in certain regions because take longer to heat.

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- ~~a. They both destroy matter during energy conversion~~
~~b. They both convert thermal energy into gravitational energy~~
☒ c. They both convert chemical energy into thermal energy
~~d. They both convert kinetic energy into potential energy.~~

30 37

YOUR SCORE:

67

A40680269

ISP 203A: GLOBAL CHANGE

EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

1

STUDENT ID #: A40680269; GROUP #: 9

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 9
a. ~~Water molecules become larger~~
b. ☒ Gaseous water becomes liquid water
c. ~~Hydrogen and oxygen atoms combine to form liquid water~~
d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
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c. ☒ Glaciers
d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
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c. ☒ Ground water from beneath the surface
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b. ☒ A = condensation, B= precipitation, C= evaporation
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d. A = precipitation, B= freezing, C= condensation
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A40680269

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

2

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a. A= chemical, B= thermal, C= thermal

b. A = gravit

c. A = gravit

d. A= therm

8. The drawing represents _____ through the _____ the dashed _____ represent _____ table. If the _____ represents _____ during the _____ which figure _____ represent _____ region during _____ season?

9. We can know the density would be _____
a. beer
b. beer
c. rem

10. What _____
a. Plai
b. Plai
c. Plai

sed to
vel

A40680269

ISP 203A: GLOBAL CHANGE

EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

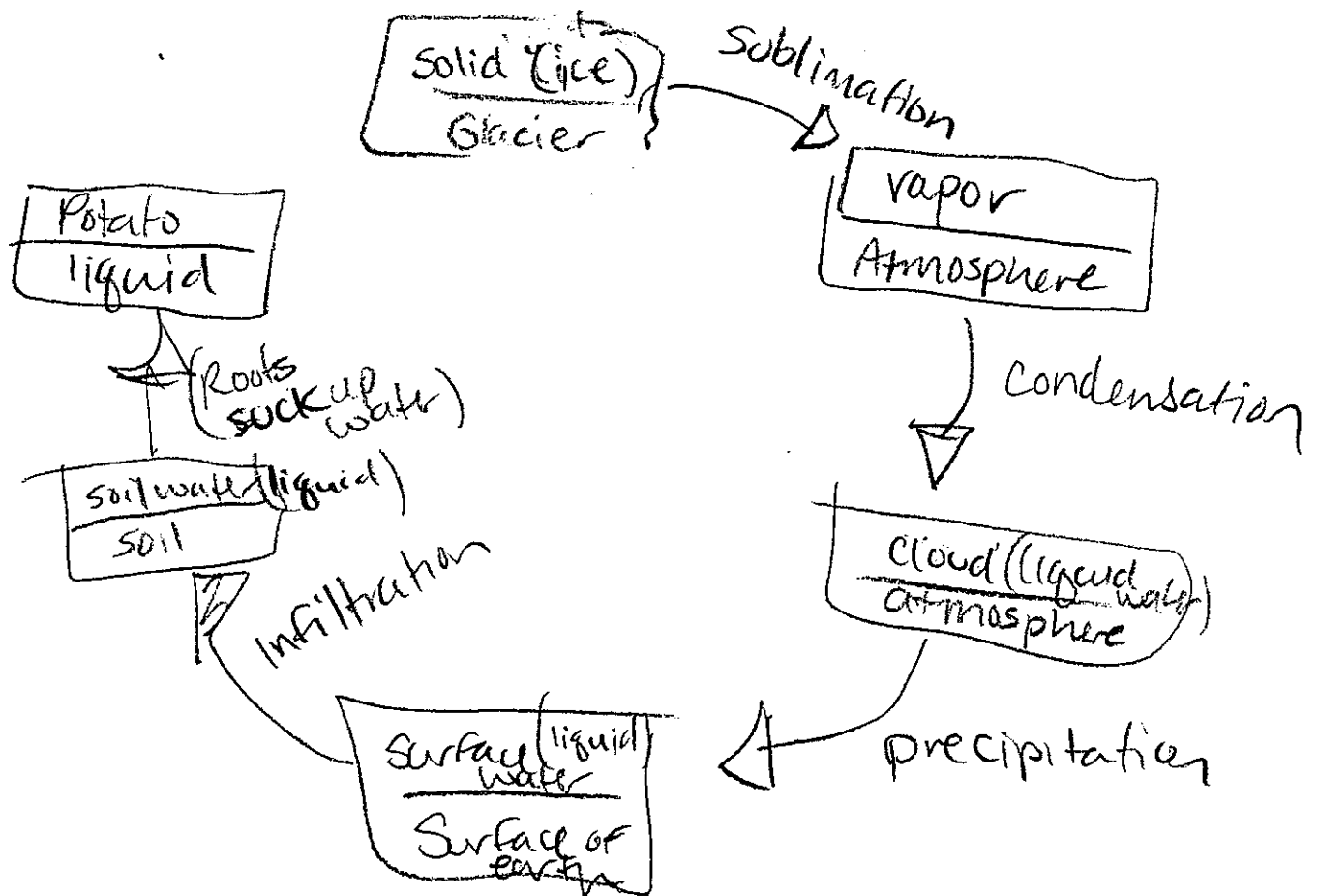
3

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water

This is how a water molecule could move from a glacier to become part of a potato



25

A46680267

ISP 203A: GLOBAL CHANGE

EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

4

2. When ice forms from seawater, the ice contains less salt than the remaining water.

Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

20

Thermohaline circulation happens because salt water is more dense than fresh water and because warm water is less dense than cold water. So, saltier water sinks as less saltier water rises & warm water rises as colder water sinks. Water near the equator is warmer than water near the poles therefore more rises and then spreads out or circulates toward the poles & water at the poles is colder & the warm water there eventually cools & sinks. So it is like a circle, warm water rises, cools as it gets farther from the equator, sinks, and moves back toward the equator where it rises again. If polar ice contained more salt than surrounding sea water it would be more dense than normal ice, therefore it would float less than normal ice (possibly sink depending on density of polar ice vs. seawater) causing seawater to possibly rise above saltier polar ice. This would effect the thermohaline circulation cycle by causing the water near the poles to sink & rise different

EXTRA CREDIT (2 points)

2 EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

explain

45 47

YOUR SCORE:

92

STUDENT ID #: A46366040; GROUP #: 10

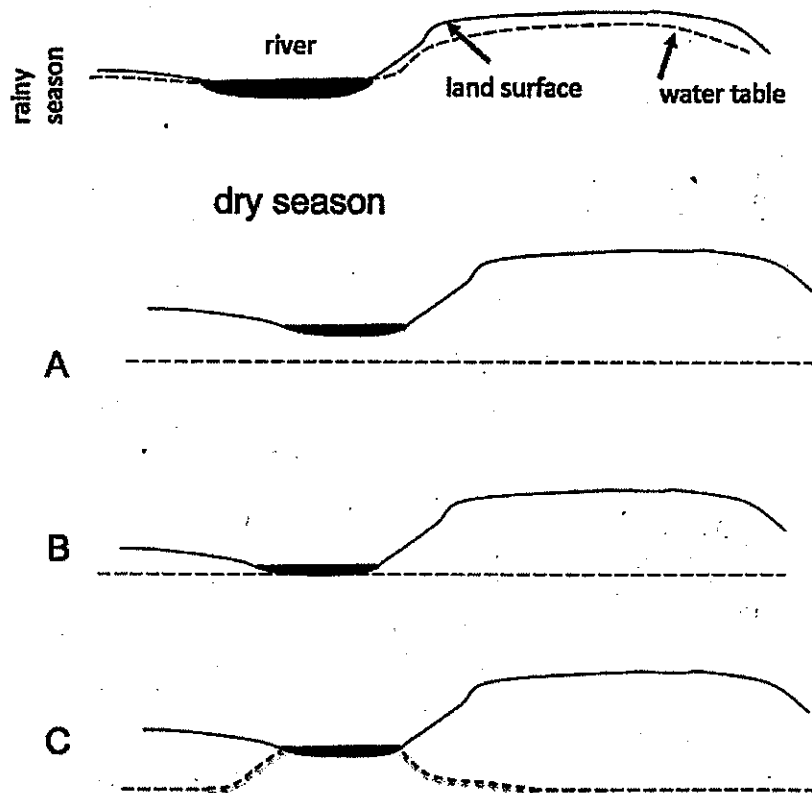
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 8
 - a. Water molecules become larger
 - b. Gaseous water becomes liquid water
 - c. Hydrogen and oxygen atoms combine to form liquid water
 - d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
 - a. The atmosphere
 - b. Oceans
 - c. Glaciers
 - d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
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 - b. Seasonal high water from the Mississippi River
 - c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
 - a. A= evaporation, B= deposition, C= sublimation
 - b. A = condensation, B= precipitation, C= evaporation
 - c. A= sublimation, B= precipitation, C= evaporation
 - d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
 - a. Liquid water from the pot condenses
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 - c. Water vapor from the pot condenses
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6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
 - a. This is what one would predict with global warming
 - b. This is the opposite of what one would predict with global warming
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7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
 b. A = gravitational, B= gravitational, C= thermal
 c. A = gravitational, B= thermal, C= thermal
 d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



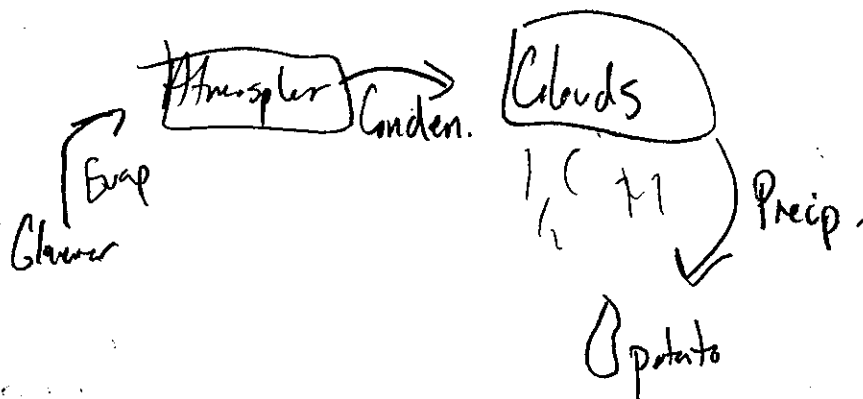
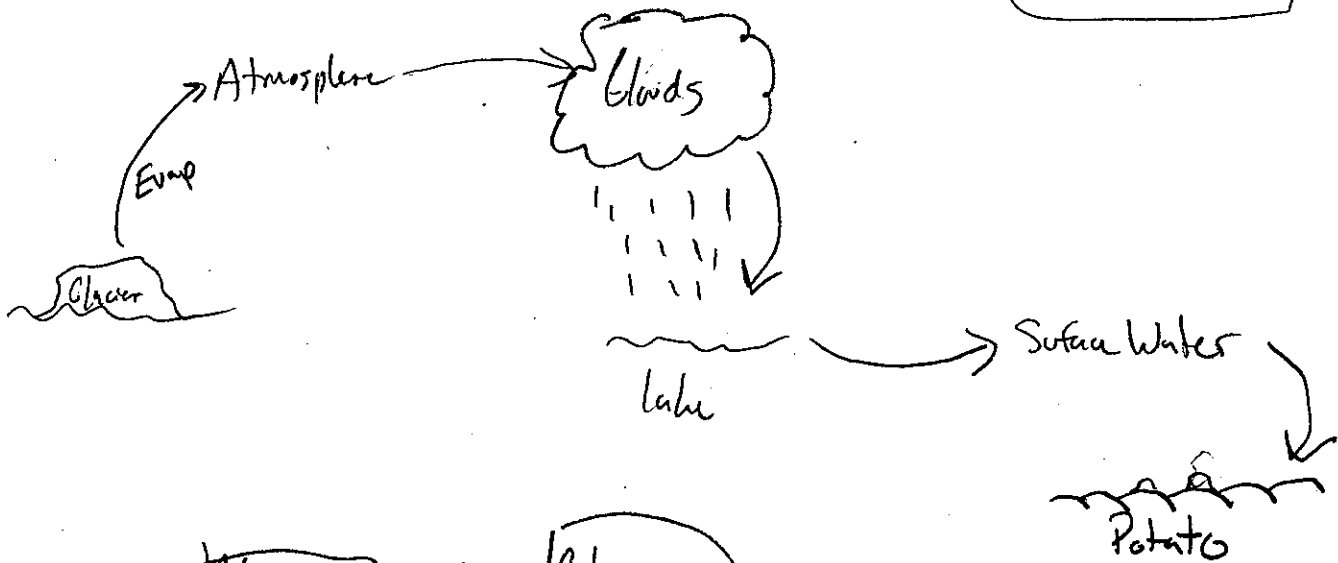
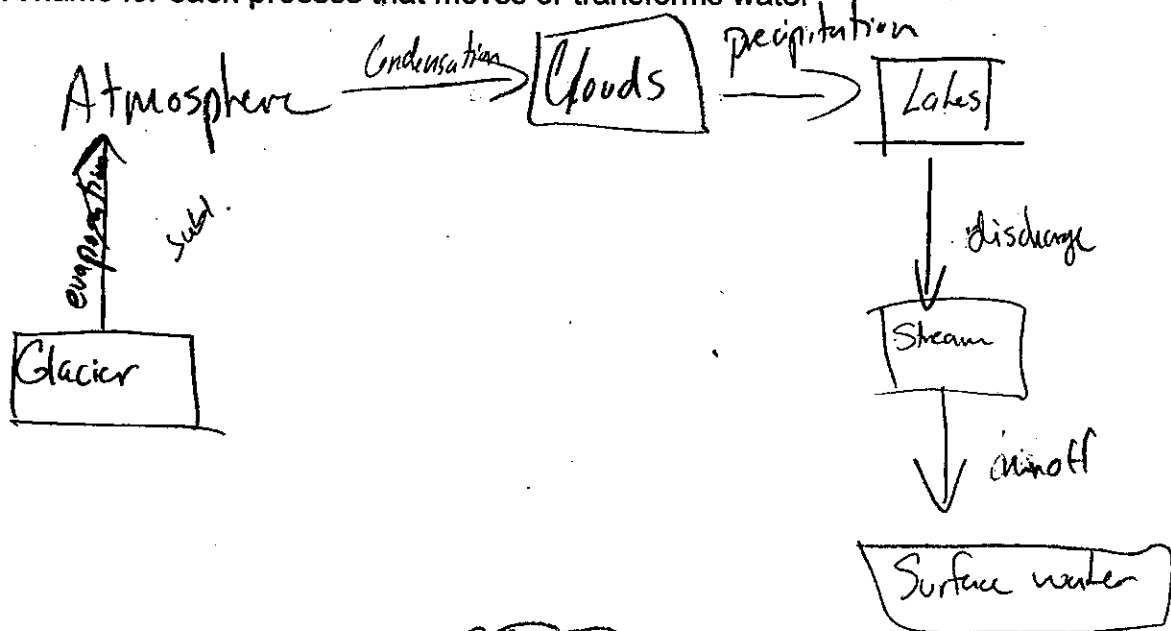
9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 b. been less
 c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 b. Plants convert energy into biomass
 c. Plants release energy

A40366040

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water



A40366040

ISP 203A: GLOBAL CHANGE

EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

4

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- a. Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - b. The energy that is causing movement or transformation of water.

Circulation happens because of the current that allows the ocean water to flow in a certain way. This is determined by the ocean currents and air flow. With the colder, denser water on the bottom the warmer water is carried throughout. The air flow also helps determine the pace at which the current is moving. Thermal energy in both the water and air help control the currents since the higher the temperature of the water the more spread out the molecules are. With the introduction of salt, the water will be more dense and affect the thermal energy. If the ice had more salt we might also see an affect on residence time in the ice since there will be less water to be released, which may affect the amount of water being circulated. The

10

EXPLAIN

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- a. They both destroy matter during energy conversion
- b. They both convert thermal energy into gravitational energy
- ☒ c. They both convert chemical energy into thermal energy
- d. They both convert kinetic energy into potential energy.

40 27

YOUR SCORE:

67

STUDENT ID #: A39916396; GROUP #: 10

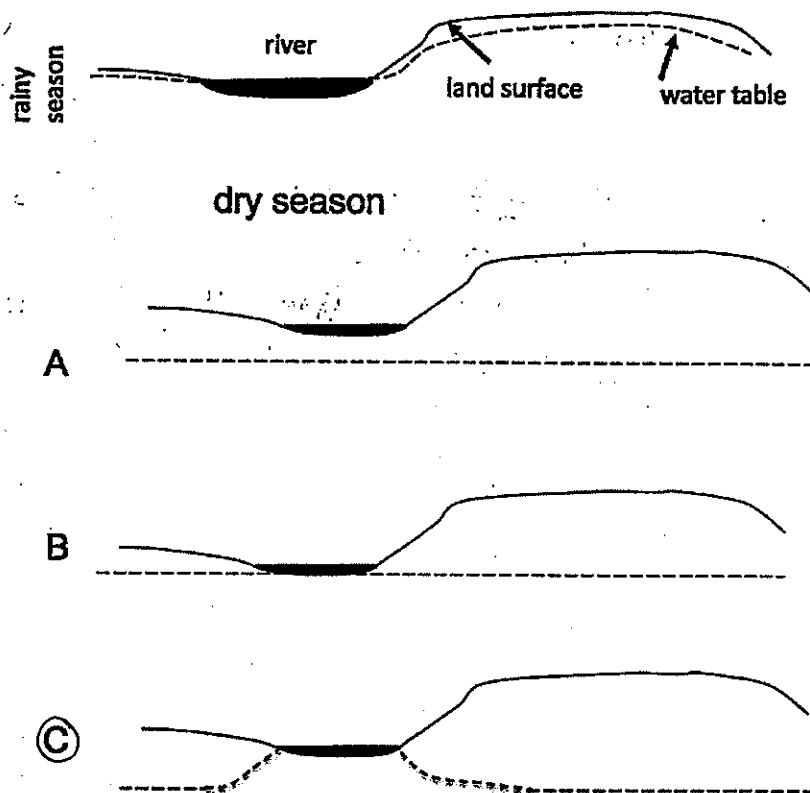
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?
a. Water molecules become larger
b. Gaseous water becomes liquid water
c. Hydrogen and oxygen atoms combine to form liquid water
d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
a. The atmosphere
b. Oceans
c. Glaciers
d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
a. Rainfall and surface runoff into the lake
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4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
a. A= evaporation, B= deposition, C= sublimation
b. A = condensation, B= precipitation, C= evaporation
c. A= sublimation, B= precipitation, C= evaporation
d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
a. Liquid water from the pot condenses
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6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
a. This is what one would predict with global warming
b. This is the opposite of what one would predict with global warming
c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
b. A = gravitational, B= gravitational, C= thermal
© A = gravitational, B= thermal, C= thermal
d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?

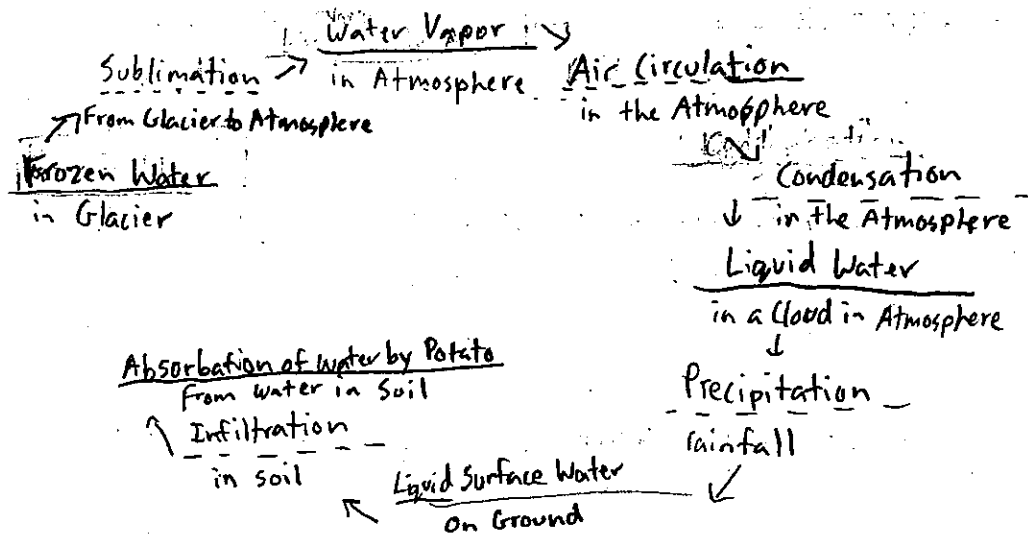


9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
b. been less
© remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
b. Plants convert energy into biomass
© Plants release energy

A3991639C

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
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 - A name for each process that moves or transforms water



25

A39916396

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
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Circulation is the rising of

Warmer and fresher water is less dense than cooler and saltier water. Circulation is the process by which less dense molecules rise and more dense molecules fall. Thermohaline circulation is the process of denser colder saltier water sinking to the deeper parts of the ocean and warmer fresher water rising, it is summed up in buoyancy. If polar ice contained more salt than the surrounding sea water, the melting ice would severely disrupt or even stop thermohaline circulation. Because, most of the freshwater involved in the cycle comes from the melting polar caps. To disrupt this balance and take away the influx of fresh less dense water would destroy the circulation.

not so much in oceans

10

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- a. They both destroy matter during energy conversion
- b. They both convert thermal energy into gravitational energy
- © They both convert chemical energy into thermal energy
- d. They both convert kinetic energy into potential energy.

50 37

YOUR SCORE:

88 87

STUDENT ID #: A42108428; GROUP #: 10

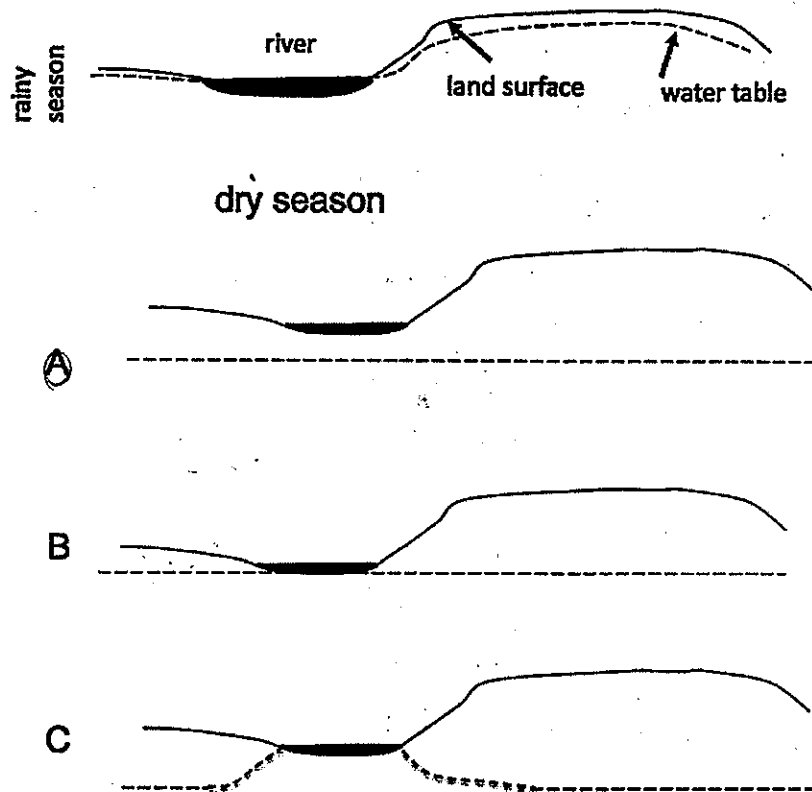
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 7
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8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
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A 42108428

ISP 203A: GLOBAL CHANGE

EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

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Thermohaline circulation would change because of the density of objects. Circulation occurs because the warm and cold molecules in the ocean water are constantly moving and circulating through the ocean. Warm water molecules are less dense. If a polar ice contained more salt than the surrounding water, it would most likely sink the ice cap. The cap would be less dense than the water and not be able to stay afloat. The more salt in ice, the less dense it would be. This could cause circulation to change because thermal energy change would cause change in temperature of the water.
how?

5

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

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- c. They both convert chemical energy into thermal energy
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35 3
YOUR SCORE
65

~~XXXXXXXXXX~~
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

1

STUDENT ID #: A42154647 ; **GROUP #:** 11

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

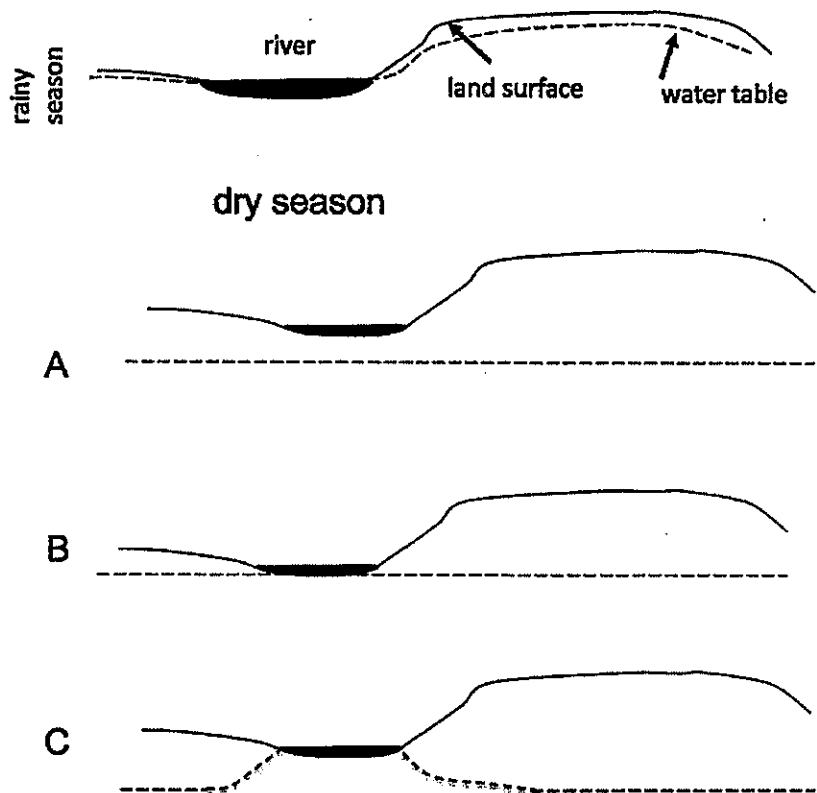
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☒ c. Hydrogen and oxygen atoms combine to form liquid water
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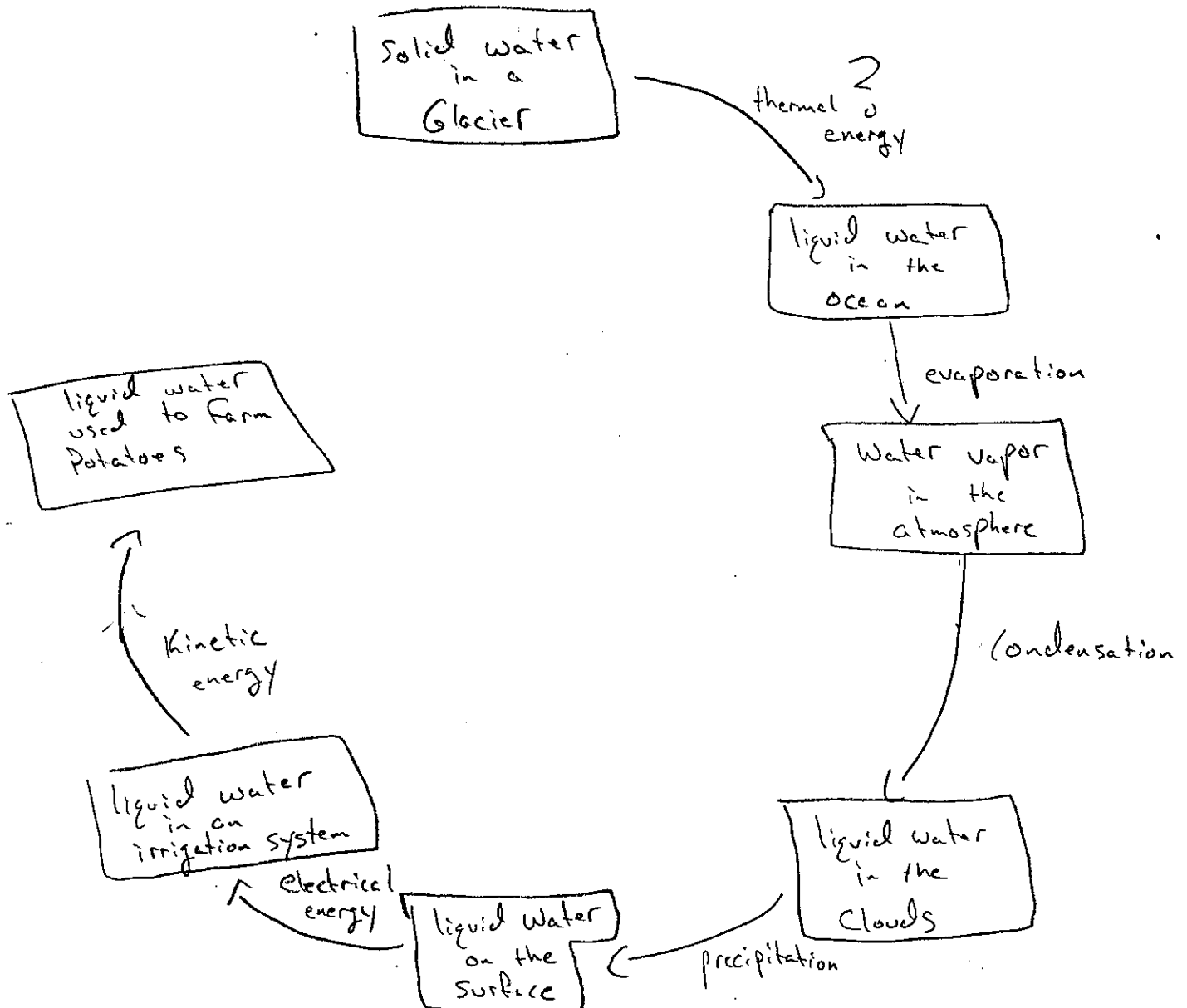
8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
b. been less
c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
b. Plants convert energy into biomass
c. Plants release energy

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- Water phase at each step in the journey
 - A name for each process that moves or transforms water



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A42154647

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

4

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

Thermohaline circulation would be affected if polar ice contained more salt than the surrounding seawater because the polar ice would be denser and would therefore be cooler. when exposed to thermal energy. When it melted then, it would displace the more dense, cooler water. This would cause the warmer, saltier water to be exposed to more sunlight, but take a longer time to evaporate, thus causing the water levels to increase slightly. This would affect the entire water cycle because it would cause less precipitation as well.

2

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- ☒ They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

25 27

YOUR SCORE:

52

STUDENT ID #: A43773910; GROUP #: 11

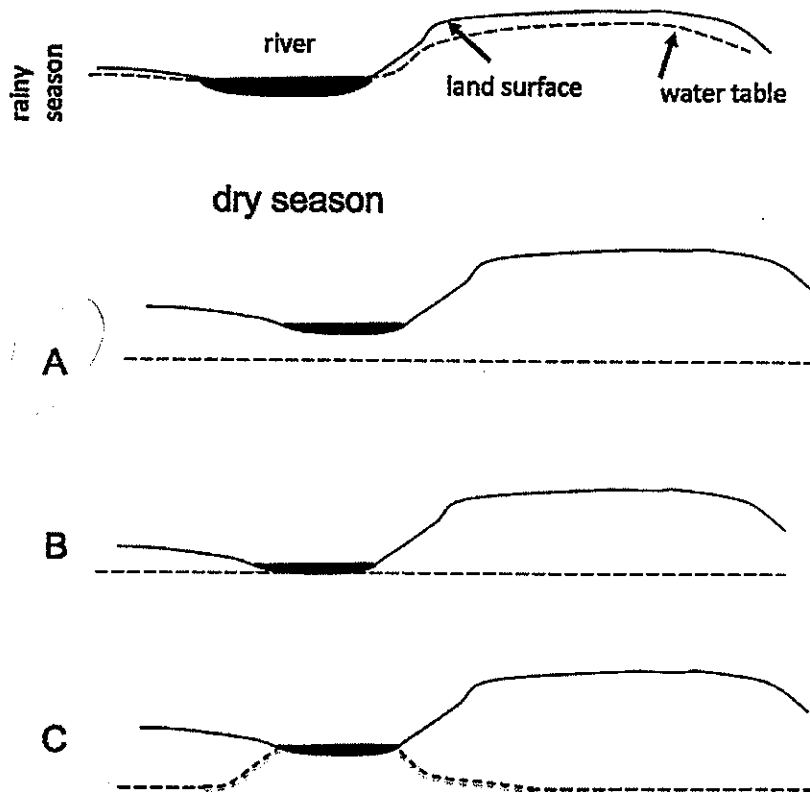
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

- 5
1. What happens when water molecules condense?
 - a. Water molecules become larger
 - b. Gaseous water becomes liquid water
 - c. Hydrogen and oxygen atoms combine to form liquid water
 - d. The temperature of water molecules decreases
 2. Which of the following is the largest freshwater reservoir
 - a. ~~The atmosphere~~
 - b. ~~Oceans~~
 - c. Glaciers
 - d. Lakes and streams
 3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
 - a. Rainfall and surface runoff into the lake
 - b. Seasonal high water from the Mississippi River
 - c. Ground water from beneath the surface
 4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
 - a. A= evaporation, B= deposition, C= sublimation
 - b. A = condensation, B= precipitation, C= evaporation
 - c. A= sublimation, B= precipitation, C= evaporation
 - d. A = precipitation, B= freezing, C= condensation
 5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
 - a. Liquid water from the pot condenses
 - b. Liquid water from the pot evaporates
 - c. Water vapor from the pot condenses
 - d. Water vapor from the pot evaporates
 6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
 - a. This is what one would predict with global warming
 - b. This is the opposite of what one would predict with global warming
 - c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?

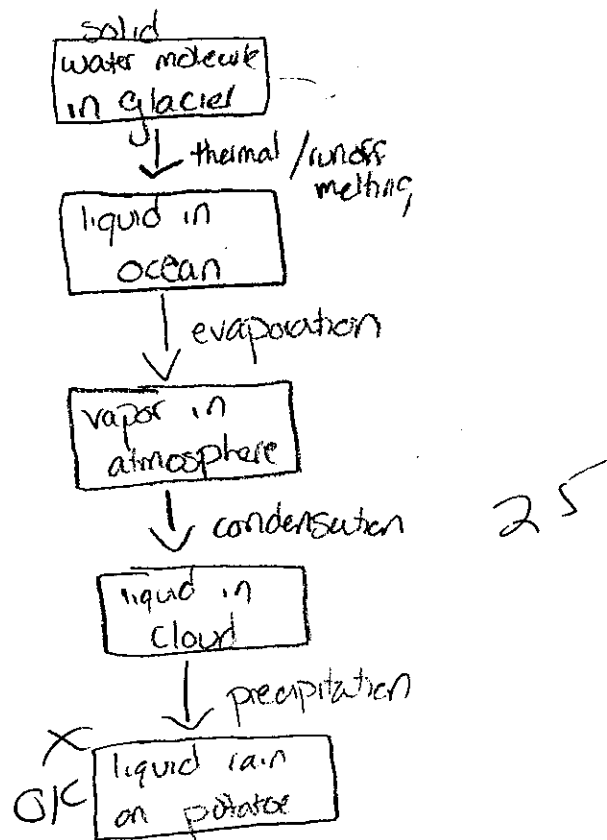


9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

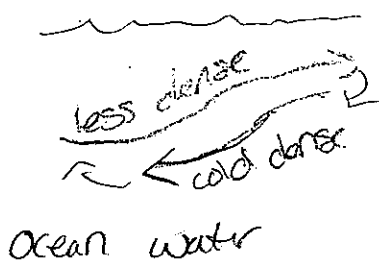
- Water phase at each step in the journey
- A name for each process that moves or transforms water



If the water molecule starts out in the glacier in a solid form of ice, the water molecule can then undergo thermal energy change of melting into the oceans. From there it is evaporated to become a vapor in the atmosphere. Using thermal energy it then becomes a liquid form in cloud, and the gravitational energy of precipitation over the field where the potato is causes it to soak to the potatoes and become a part of its make up.

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - The energy that is causing movement or transformation of water.

If polar ice contained more salt than its surrounding seawater, when it melted (it) would be ^{more} less dense. During ocean circulation the colder, more dense water is pushed to the bottom, causing the less dense water to be risen to the top, which creates circulation. Water density; circulation is affected by temperature; composition



2

When polar ice melts, it's still significantly colder than its surrounding water, so it is circulated to the bottom. If the polar ice contained more salt, this would cause it to be ~~less~~ denser than the surrounding water, which may cause it to not circulate as well, messing up thermohaline circulation.

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

25 29

YOUR SCORE:

54

STUDENT ID #: A42112058; GROUP #: 11

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

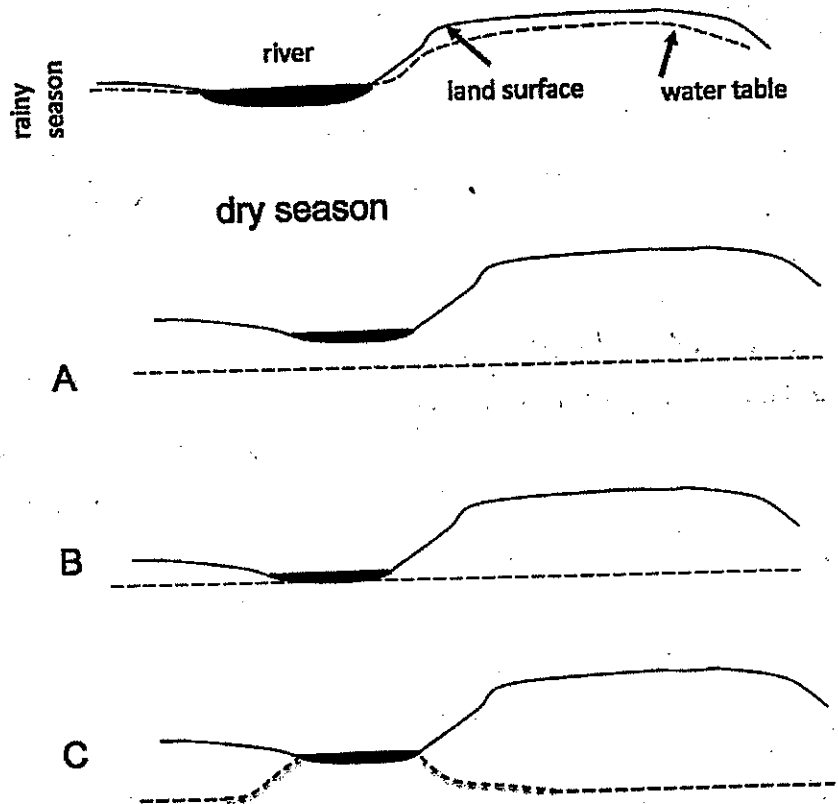
8

1. What happens when water molecules condense?
 - a. Water molecules become larger
 - b. Gaseous water becomes liquid water
 - c. Hydrogen and oxygen atoms combine to form liquid water
 - d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
 - ~~a. The atmosphere~~
 - b. Oceans
 - c. Glaciers
 - d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
 - a. Rainfall and surface runoff into the lake
 - b. Seasonal high water from the Mississippi River
 - c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
 - ~~a. A= evaporation, B= deposition, C= sublimation~~
 - b. A = condensation, B= precipitation, C= evaporation
 - ~~c. A= sublimation, B= precipitation, C= evaporation~~
 - d. A= precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
 - a. Liquid water from the pot condenses
 - b. Liquid water from the pot evaporates
 - c. Water vapor from the pot condenses
 - d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
 - a. This is what one would predict with global warming
 - b. This is the opposite of what one would predict with global warming
 - c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
 b. A = gravitational, B= gravitational, C= thermal
 c. A = gravitational, B= thermal, C= thermal
 d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



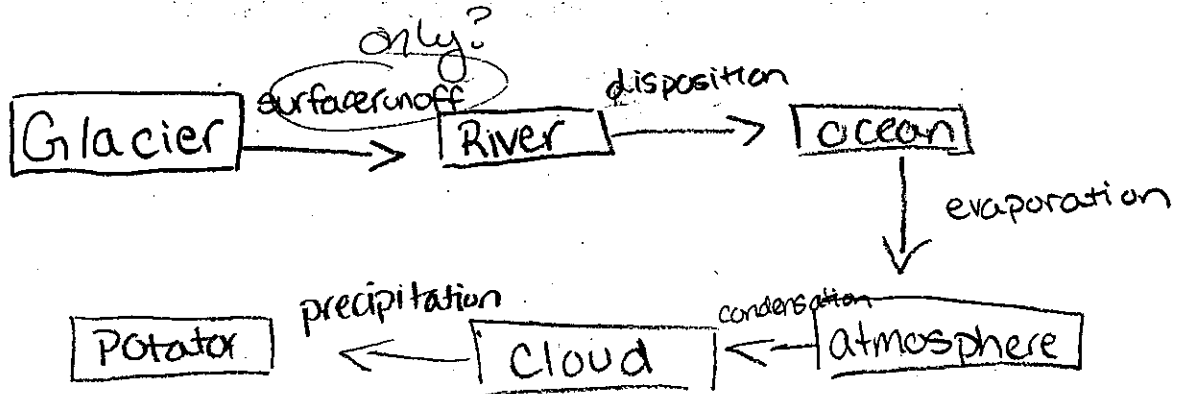
9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- been greater
 - been less
 - remained the same
10. What happens when plants respire?
- Plants convert biomass into energy
 - Plants convert energy into biomass
 - Plants release energy

A42112058

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water



The melting glacier creates surface runoff into the river that disposes into the ocean. Where evaporation occurs into the atmosphere, then condensation begins to form a cloud that precipitates rain to water the potato seed that grows a potato.

A42112038

ISP 203A: GLOBAL CHANGE

EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

4

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- a. Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - b. The energy that is causing movement or transformation of water.

The thermohaline circulation in oceans would change if polar ice contained more salt than surrounding seawater by the fact that if the polar ice would have more salt that it wouldn't freeze creating tons more sea water in the water cycle. The circulation needs to stay in an equilibrium because this cycle is keeping water moving continuously in the earth. This circulation is caused by energy in different forms, such as chemical energy, gravitational energy, and thermal energy. Without those 3 energies the cycle would no longer be in circulation.

5

8 EXTRA CREDIT (2 points)

- EC. How are burning wood and respiration similar?
- a. They both destroy matter during energy conversion
 - b. They both convert thermal energy into gravitational energy
 - c. They both convert chemical energy into thermal energy
 - d. They both convert kinetic energy into potential energy.

40 22

YOUR SCORE:

62

A43835916

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

1

STUDENT ID #: A43835916; GROUP #: 11

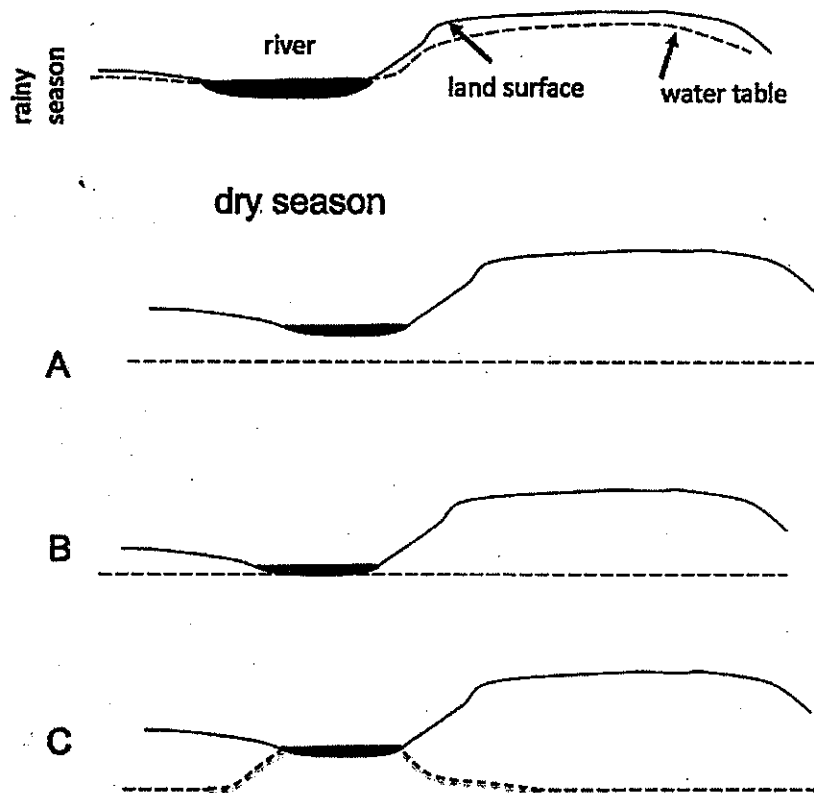
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

- 9
1. What happens when water molecules condense?
 - a. Water molecules become larger
 - b. Gaseous water becomes liquid water
 - c. Hydrogen and oxygen atoms combine to form liquid water
 - d. The temperature of water molecules decreases
 2. Which of the following is the largest freshwater reservoir
 - a. The atmosphere
 - b. Oceans
 - c. Glaciers
 - d. Lakes and streams
 3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
 - a. Rainfall and surface runoff into the lake
 - b. Seasonal high water from the Mississippi River
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 4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of ____A____, then becomes water in a glacier through the process of ____B____, and then becomes water in clouds through the process of ____C____.
 - a. A= evaporation, B= deposition, C= sublimation
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 5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
 - a. Liquid water from the pot condenses
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 6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
 - a. This is what one would predict with global warming
 - b. This is the opposite of what one would predict with global warming
 - c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

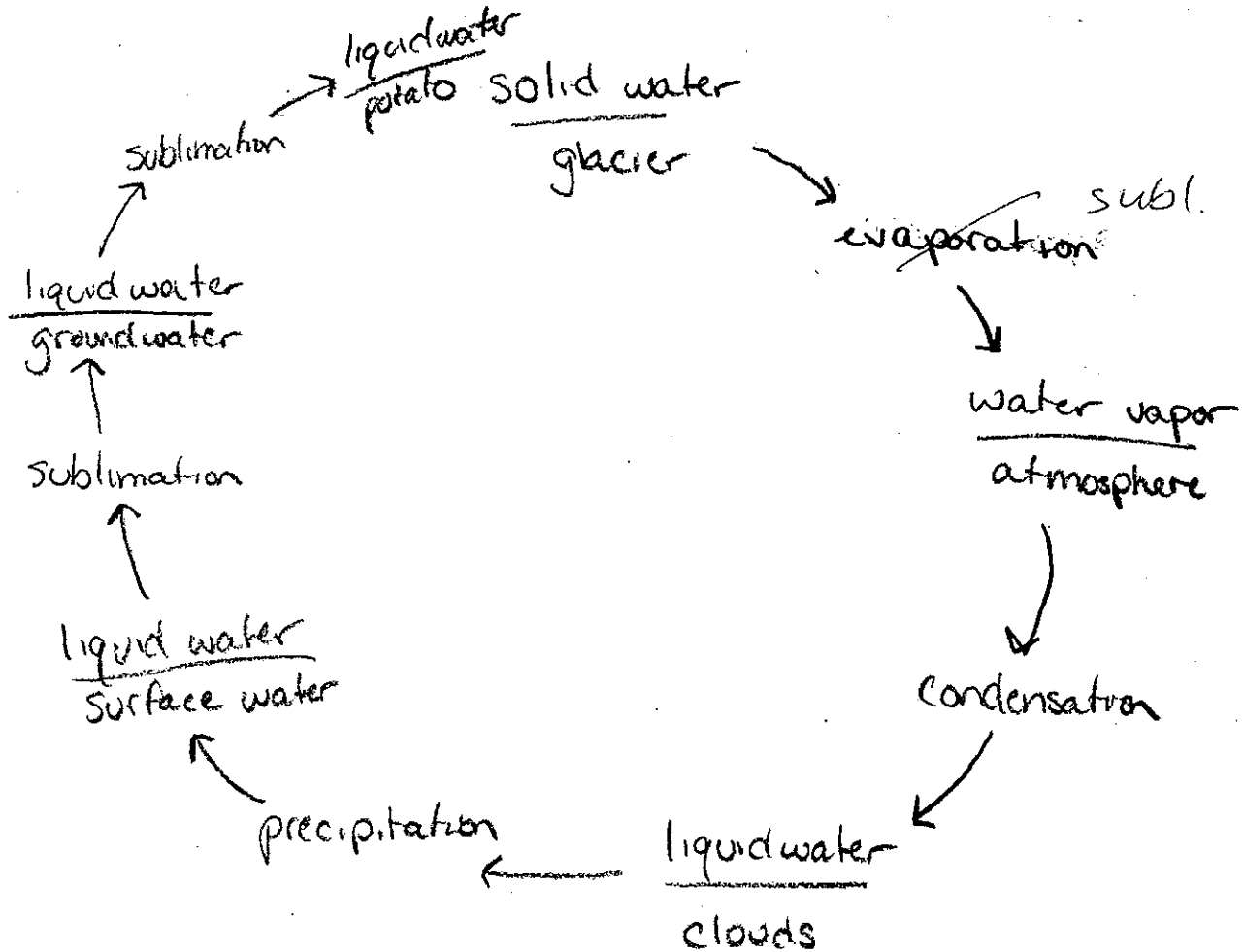
8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- Water phase at each step in the journey
 - A name for each process that moves or transforms water



2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - The energy that is causing movement or transformation of water.

Thermohaline circulation is the process that allows salt water to rise over freshwater. Because salt water is less dense than freshwater, the salt water rises. If polar ice contained more salt, I do not believe it would have much of an affect on the thermohaline circulation in the oceans. The ocean water would altogether be less salty but thermohaline circulation would still occur because there is still salt. Overall, I believe the biggest difference that would be made if polar ice contained more salt would be that freshwater would be even more difficult to obtain.

5

2 EXTRA CREDIT (2 points)

- EC. How are burning wood and respiration similar?
- They both destroy matter during energy conversion
 - They both convert thermal energy into gravitational energy
 - They both convert chemical energy into thermal energy
 - They both convert kinetic energy into potential energy.

45 29

YOUR SCORE:

74

STUDENT ID #: A40920866; GROUP #: 12

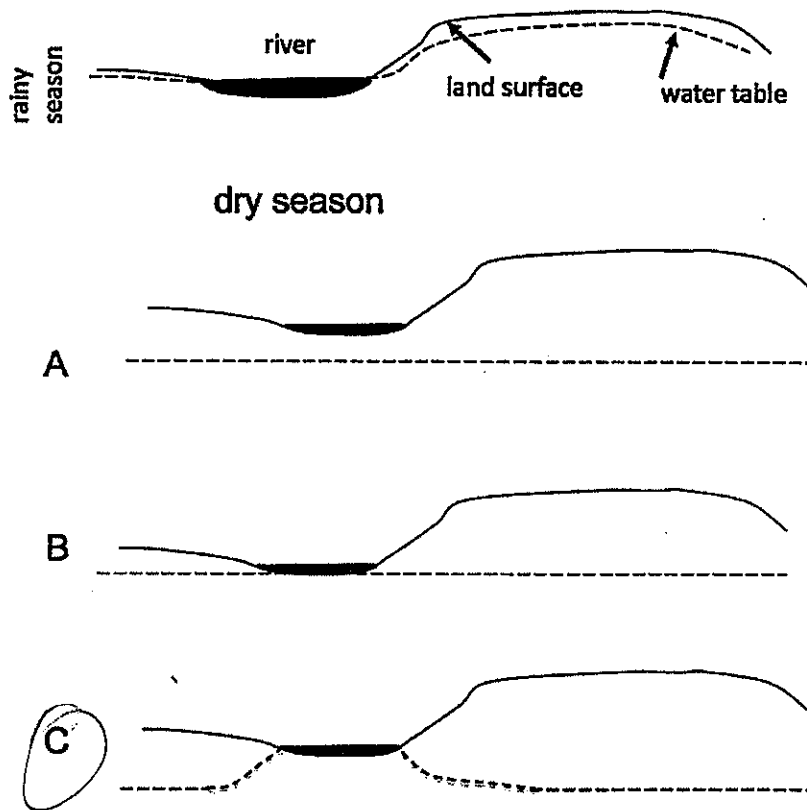
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 6
 - a. Water molecules become larger
 - b. Gaseous water becomes liquid water
 - c. Hydrogen and oxygen atoms combine to form liquid water
 - ☒ d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
 - a. The atmosphere
 - b. Oceans
 - ☒ c. Glaciers
 - d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
 - ☒ a. Rainfall and surface runoff into the lake
 - b. Seasonal high water from the Mississippi River
 - c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of ____A____, then becomes water in a glacier through the process of ____B____, and then becomes water in clouds through the process of ____C____.
 - a. A= evaporation, B= deposition, C= sublimation
 - ☒ b. A = condensation, B= precipitation, C= evaporation
 - c. A= sublimation, B= precipitation, C= evaporation
 - d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
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6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
 - ☒ a. This is what one would predict with global warming
 - b. This is the opposite of what one would predict with global warming
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7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
b. A = gravitational, B= gravitational, C= thermal
c. A = gravitational, B= thermal, C= thermal
d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?

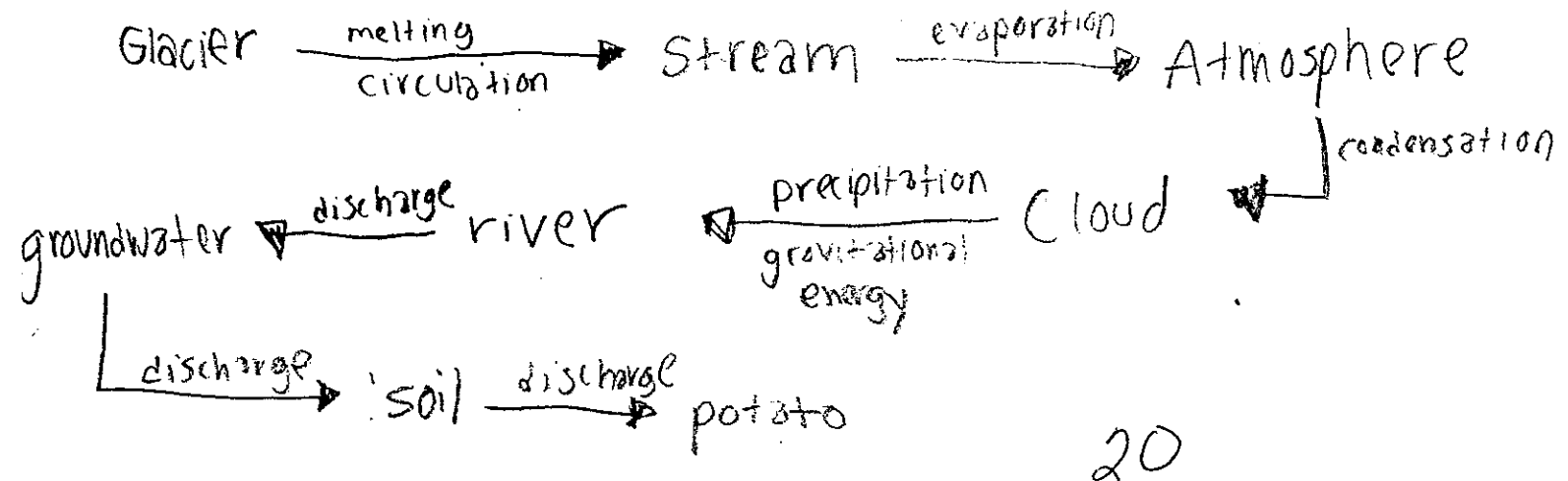


9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
b. been less
c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
b. Plants convert energy into biomass
c. Plants release energy

A40920866

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- Water phase at each step in the journey
 - A name for each process that moves or transforms water



20

The glacier could melt due to circulation of heat and become another water source such as a stream. That could then evaporate into the atmosphere, condense and become a cloud. Due to gravitational energy precipitation could then occur causing the water to go into a reservoir such as a river. Discharge from that reservoir to the ground from gravitational energy would put water into the soil—soil water is transferable to potatoes that grow in that soil.

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

Circulation initially occurs as a result of the change in densities that accompanies temperature changes. For example, the warmer something gets the less dense it will be. When salt is thrown into this framework of how circulation operates it adds to the density of whichever water source it inhabits. This in turn makes the reservoir that it leaves become less dense. The seawater in polar regions would then evaporate more rapidly? as a result of its loss in density and the polar ice would take longer to change out of its condensed form. This changes the thermohaline circulation by making it occur faster due to the proportional density changes between ice & water. Gravitational energy would quicken the pace of circulation after being quickened from the decrease in density. 5

EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

30 25
YOUR SCORE:
55

STUDENT ID #: A43272425; GROUP #: 12

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?

9

- ☐ a. Water molecules become larger
☒ b. Gaseous water becomes liquid water
☐ c. Hydrogen and oxygen atoms combine to form liquid water
☐ d. The temperature of water molecules decreases

2. Which of the following is the largest freshwater reservoir

- ☐ a. The atmosphere
☒ b. Oceans
☐ c. Glaciers
☐ d. Lakes and streams

3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?

- ☐ a. Rainfall and surface runoff into the lake
☐ b. Seasonal high water from the Mississippi River
☒ c. Ground water from beneath the surface

4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.

- ☐ a. A= evaporation, B= deposition, C= sublimation
☒ b. A = condensation, B= precipitation, C= evaporation
☐ c. A= sublimation, B= precipitation, C= evaporation
☐ d. A = precipitation, B= freezing, C= condensation

5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?

- ☐ a. Liquid water from the pot condenses
☒ b. Liquid water from the pot evaporates
☐ c. Water vapor from the pot condenses
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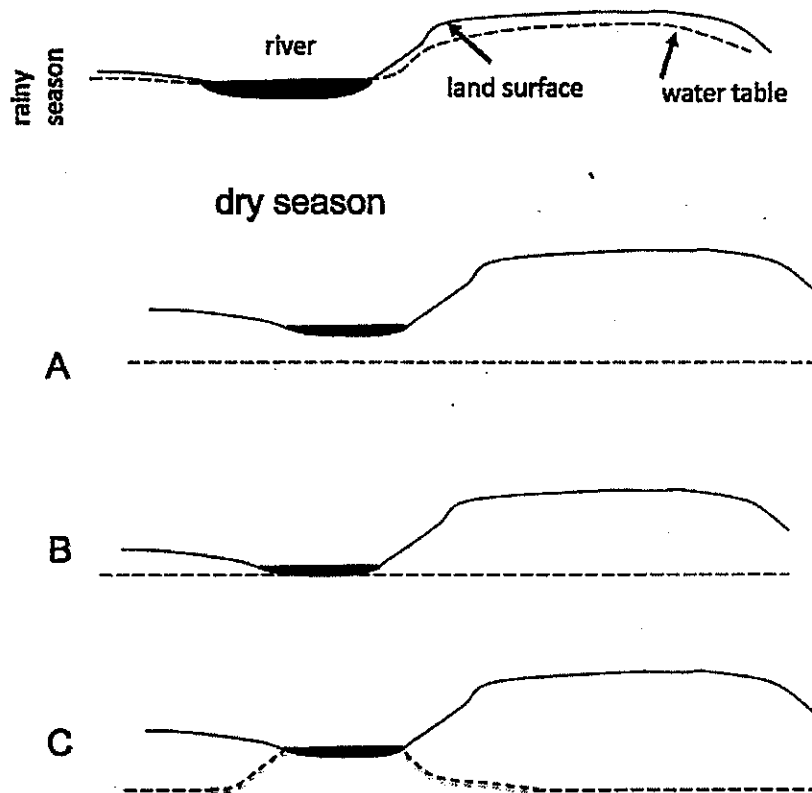
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?

- ☒ a. This is what one would predict with global warming
☐ b. This is the opposite of what one would predict with global warming
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7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
b. A = gravitational, B= gravitational, C= thermal
c. A = gravitational, B= thermal, C= thermal
d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
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b. been less
c. remained the same

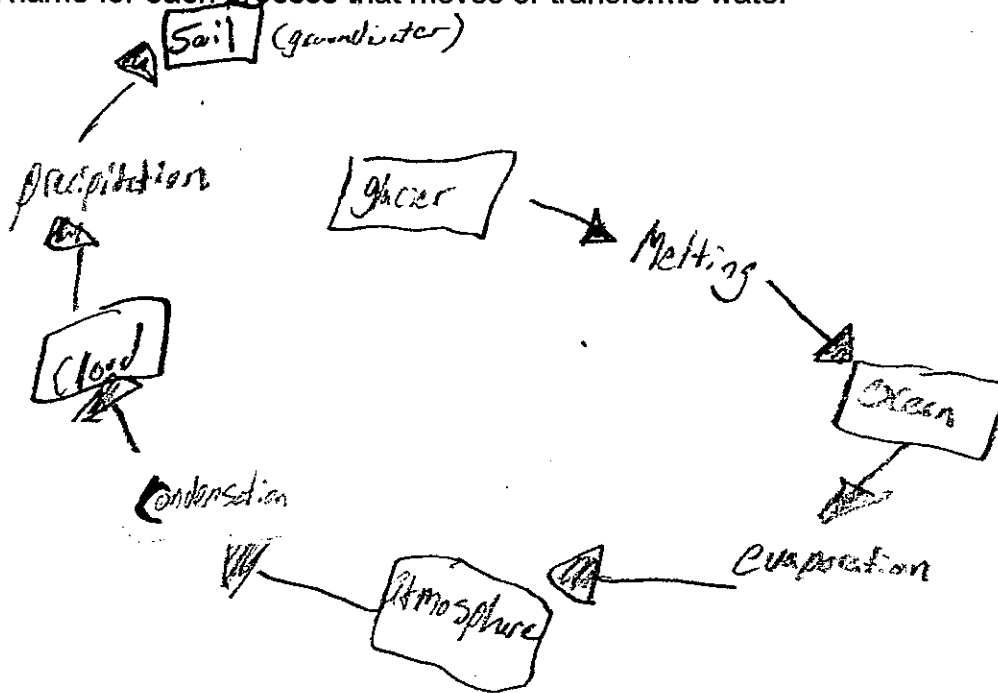
10. What happens when plants respire?
- a. Plants convert biomass into energy
b. Plants convert energy into biomass
c. Plants release energy

A43272425

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water



20

A43272425

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - The energy that is causing movement or transformation of water.

If polar ice contained more salt than the surrounding seawater when the ice melted it would transfer more salt into the oceans making thermohaline circulation also require more time for the salt to ~~evaporate~~ because the salinity of the water has increased. Evaporation and melting are causing the movement of water because as the ice melts it increases the amount of time as water due to a slower evaporation process. Thermohaline circulation would increase with a rise in salinity of the seawater.

Salt does not evaporate

7 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- C
- They both destroy matter during energy conversion
 - They both convert thermal energy into gravitational energy
 - They both convert chemical energy into thermal energy
 - They both convert kinetic energy into potential energy.

45 20

YOUR SCORE:

65

STUDENT ID #: A43365634; GROUP #: 12

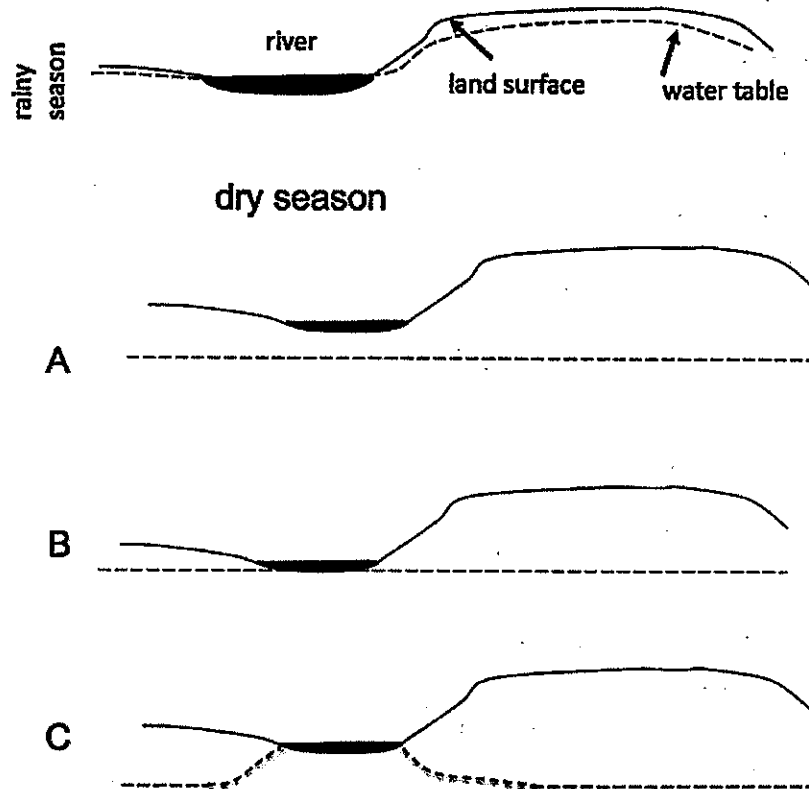
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

- 7
1. What happens when water molecules condense?
a. Water molecules become larger
☒ b. Gaseous water becomes liquid water
c. Hydrogen and oxygen atoms combine to form liquid water
d. The temperature of water molecules decreases
 2. Which of the following is the largest freshwater reservoir
a. The atmosphere
b. Oceans
☒ c. Glaciers
d. Lakes and streams
 3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
a. Rainfall and surface runoff into the lake
b. Seasonal high water from the Mississippi River
c. Ground water from beneath the surface
 4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
a. A= evaporation, B= deposition, C= sublimation
b. A = condensation, B= precipitation, C= evaporation
c. A= sublimation, B= precipitation, C= evaporation
d. A = precipitation, B= freezing, C= condensation
 5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
a. Liquid water from the pot condenses
b. Liquid water from the pot evaporates
c. Water vapor from the pot condenses
d. Water vapor from the pot evaporates
 6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
a. This is what one would predict with global warming
b. This is the opposite of what one would predict with global warming
c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A = chemical, B = thermal, C = thermal
- b. A = gravitational, B = gravitational, C = thermal
- c. A = gravitational, B = thermal, C = thermal
- d. A = thermal, B = thermal, C = thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

A4336634

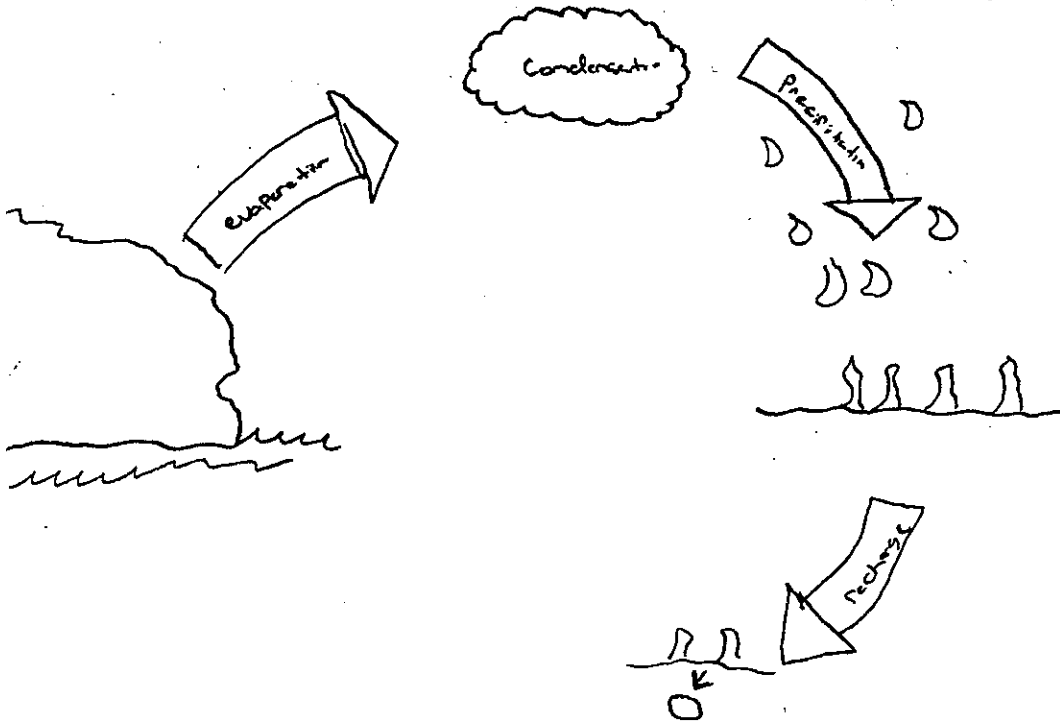
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

3

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water



Water from a glacier could naturally move to a potato

By ~~evaporating~~ ^{subl.} from a glacial form (solid) into a gaseous form in the atmosphere then the water vapor would condense into a liquid form then gravitational energy

would force the water to precipitate to become

surface water. The surface water would then recharge a subsurface

into ground water where the potato is growing

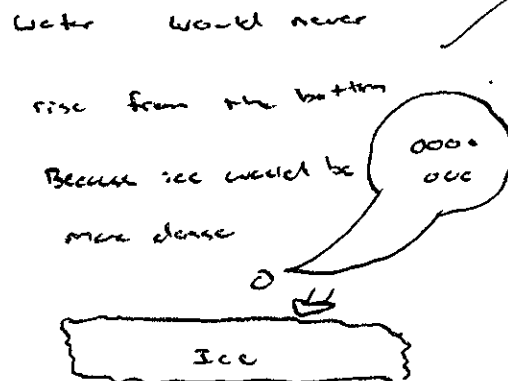
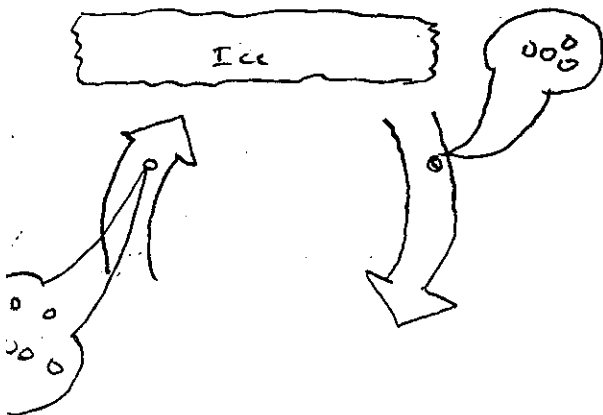
A43365634

ISP 203A: GLOBAL CHANGE

EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

4

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - The energy that is causing movement or transformation of water.



Thermohaline circulation would change because it would disrupt the natural cycle of water gaining thermal energy thus heating up the molecules allowing water to rise. Because it becomes less dense than the surrounding water and once it rises, it cools off and becomes more dense than the surrounding water and gravitational energy brings it back down and creates a cycle.

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

35 37
YOUR SCORE:
72

STUDENT ID #: A43506836; GROUP #: 17

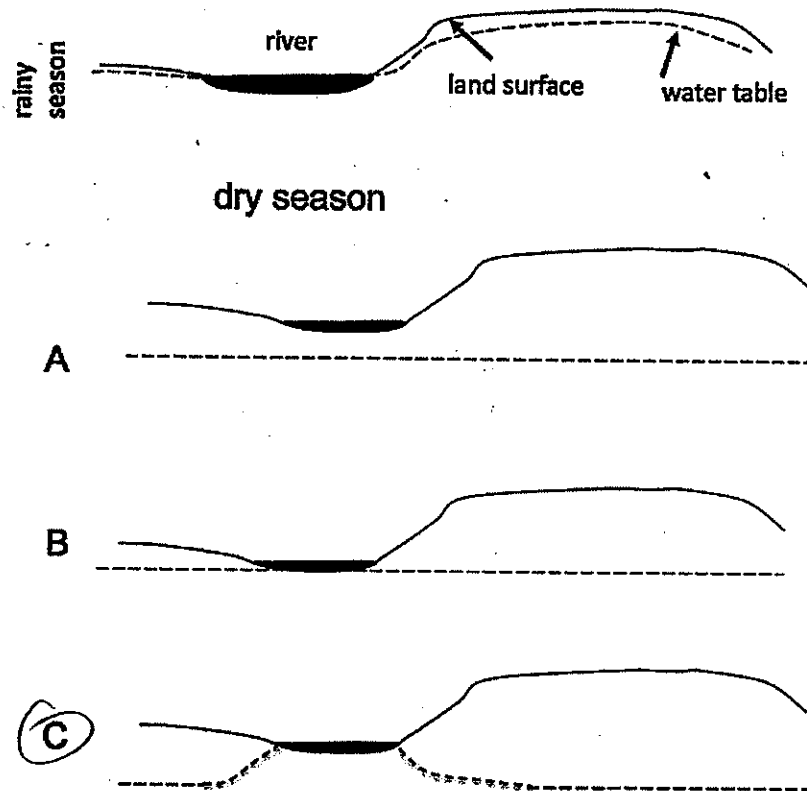
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?
~~a. Water molecules become larger~~
☒ b. Gaseous water becomes liquid water
~~c. Hydrogen and oxygen atoms combine to form liquid water~~
d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
a. The atmosphere
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☒ c. Glaciers
d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
a. Rainfall and surface runoff into the lake
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4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
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☒ c. Water vapor from the pot condenses
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7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. ~~A = chemical, B = thermal, C = thermal~~
 b. A = gravitational, B = gravitational, C = thermal
 c. A = gravitational, B = thermal, C = thermal
 d. ~~A = thermal, B = thermal, C = thermal~~

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
 a. been greater
 b. been less
 c. ~~remained the same~~
10. What happens when plants respire?
 a. Plants convert biomass into energy
 b. Plants convert energy into biomass
 c. Plants release energy

A43506836

ISP 203A: GLOBAL CHANGE

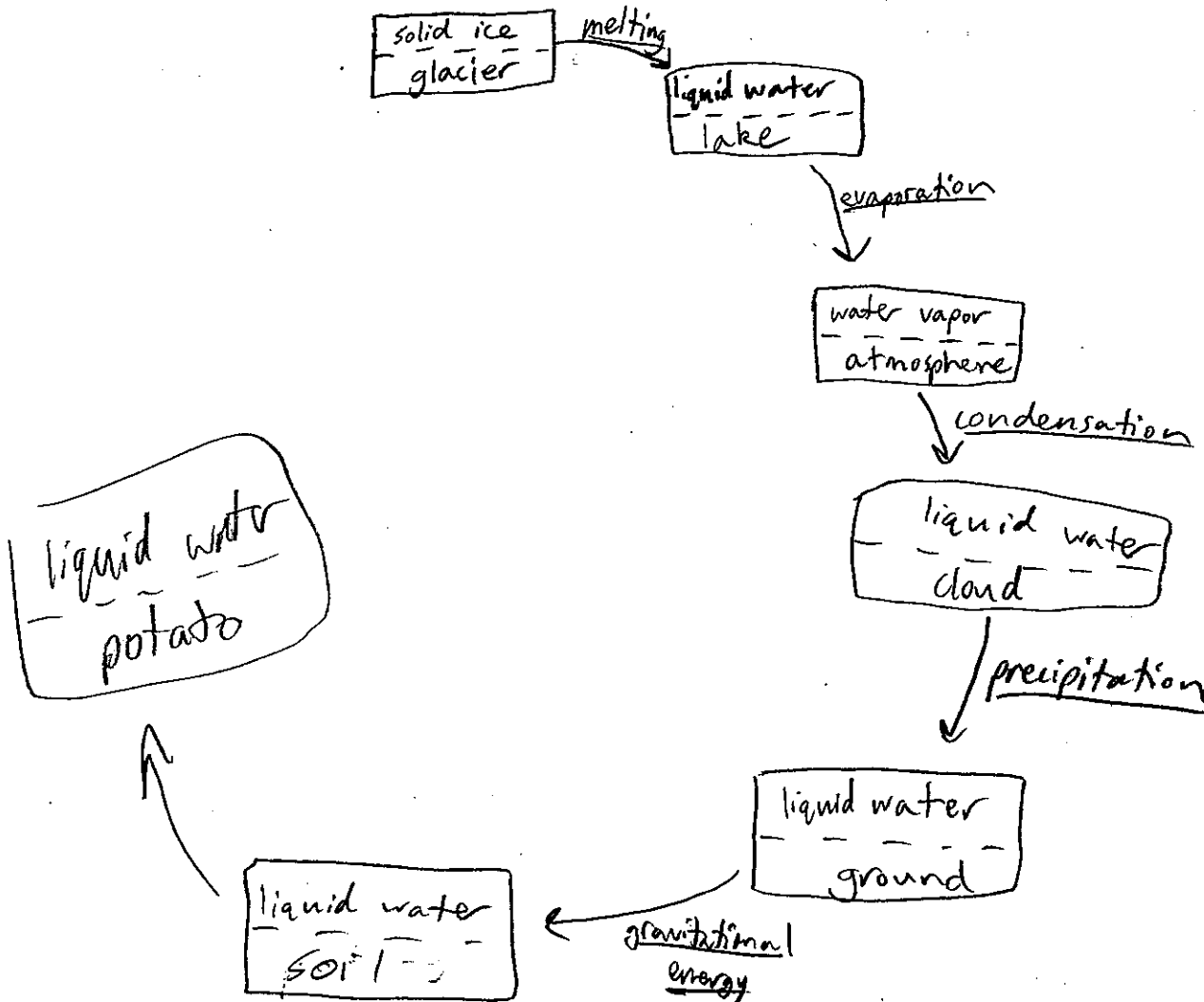
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

3

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

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25

A435 06836

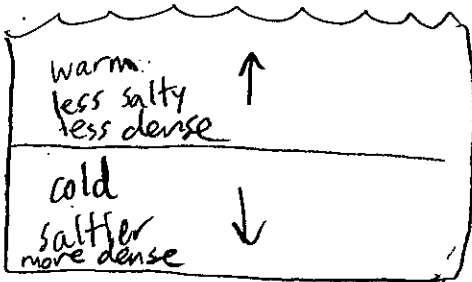
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

4

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

Thermohaline circulation is caused by differences in density. The less dense, warmer, less salty, water will rise, while the more dense, colder, saltier water will sink. Thermal energy causes water to warm and rise, while gravitational energy causes denser water to sink. If polar ice contained more salt, it would be more dense than the surrounding seawater and it would sink. f? 5



2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- ~~They both destroy matter during energy conversion~~
- They both convert thermal energy into gravitational energy
- ☒ They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

45 32

YOUR SCORE:

77

STUDENT ID #: A 42957208; GROUP #: 13

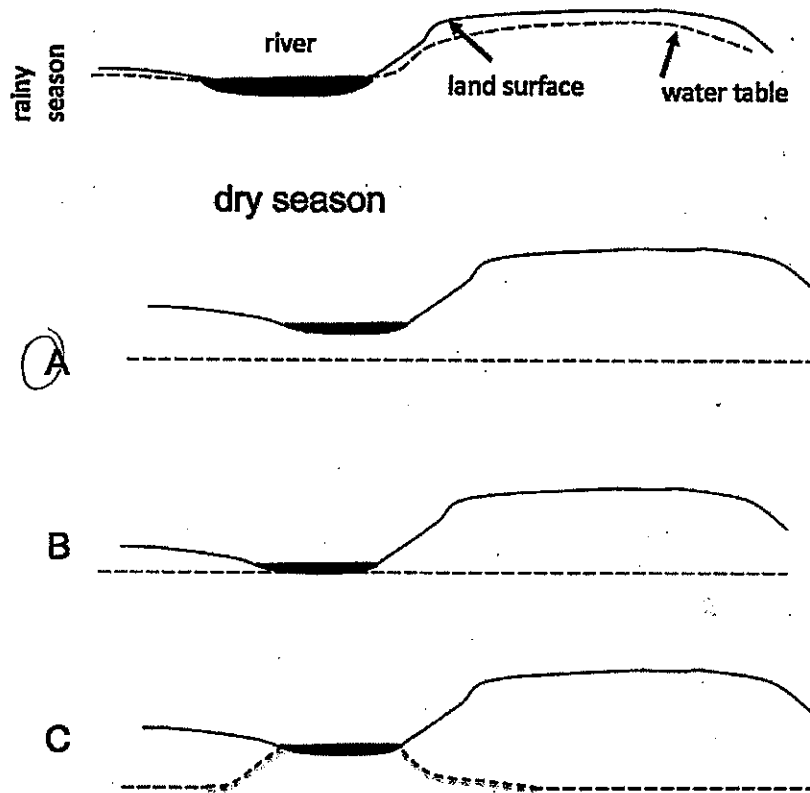
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 5
 - a. Water molecules become larger
 - ☒ b. Gaseous water becomes liquid water
 - c. Hydrogen and oxygen atoms combine to form liquid water
 - d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
 - ☒ a. The atmosphere
 - b. Oceans
 - c. Glaciers
 - d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
 - a. Rainfall and surface runoff into the lake
 - b. Seasonal high water from the Mississippi River
 - c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of ____A____, then becomes water in a glacier through the process of ____B____, and then becomes water in clouds through the process of ____C____.
 - a. A= evaporation, B= deposition, C= sublimation
 - ☒ b. A = condensation, B= precipitation, C= evaporation
 - c. A= sublimation, B= precipitation, C= evaporation
 - d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
 - a. Liquid water from the pot condenses
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 - c. Water vapor from the pot condenses
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6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
 - ☒ a. This is what one would predict with global warming
 - b. This is the opposite of what one would predict with global warming
 - c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
 b. A = gravitational, B= gravitational, C= thermal
 c. A = gravitational, B= thermal, C= thermal
 d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 b. been less
 c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 b. Plants convert energy into biomass
 c. Plants release energy

A42957208

ISP 203A: GLOBAL CHANGE

EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

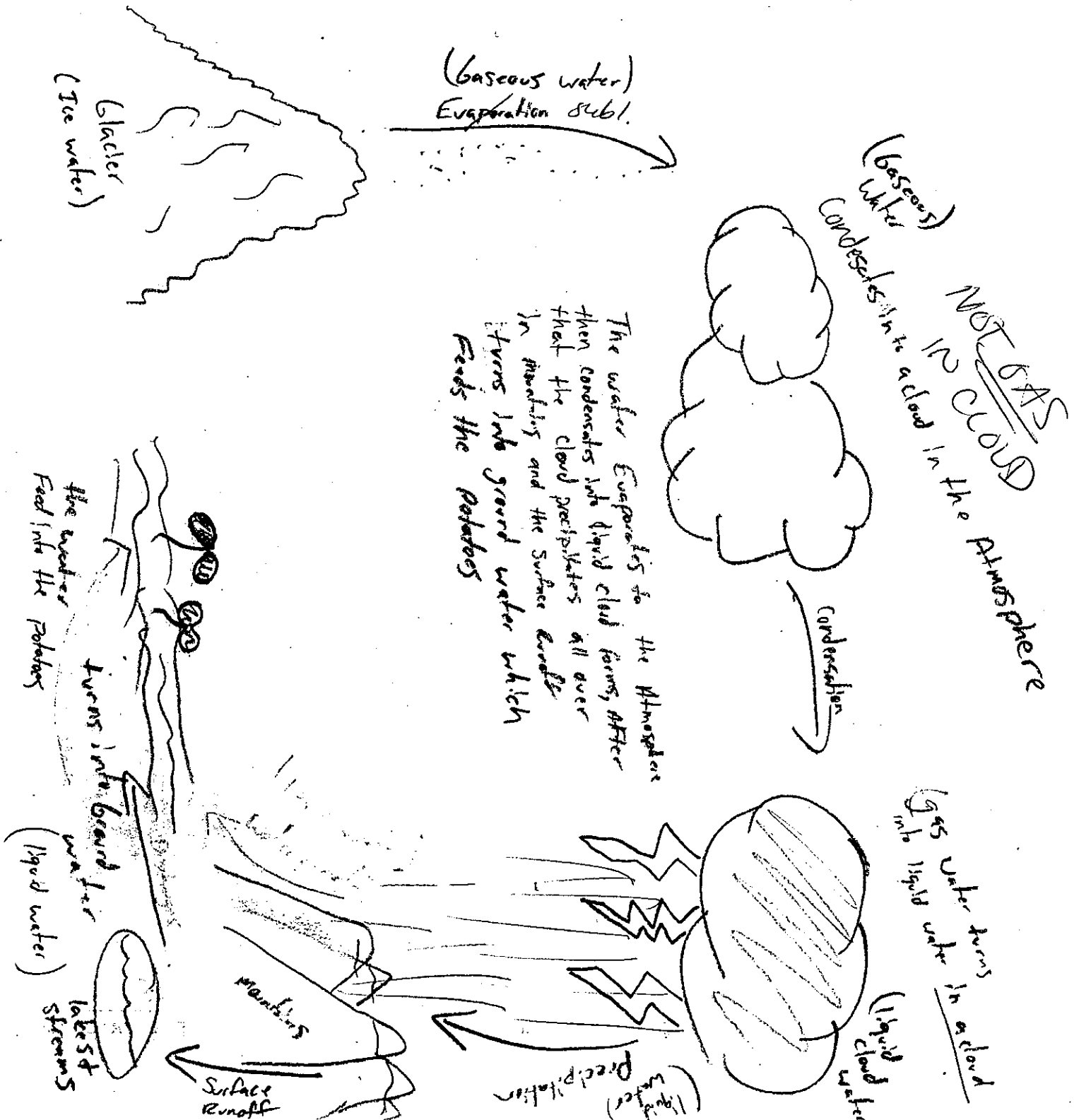
3

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water

18



2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
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5 If polar ice contained more salt than the surrounding sea water, it would change the circulation by slowing it down. For something with salt in it to freeze, it needs to be at a lower temperature compared to as if it didn't have salt in it. Since the water needs to be colder, there is less heat.

not so much in oceans
Temperature is what causes the circulation of water. As heat rises, water molecules will heat up at the top, then cool down and drop lower, resulting in circulation. So if there is less heat because of the salt in the polar ice, there is less circulation.

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

25 25

YOUR SCORE:

50

STUDENT ID #: A43819247; GROUP #: 13

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?

5

- ☐ a. Water molecules become larger
- ☐ b. Gaseous water becomes liquid water
- ☒ c. Hydrogen and oxygen atoms combine to form liquid water
- ☐ d. The temperature of water molecules decreases

2. Which of the following is the largest freshwater reservoir

- ☐ a. The atmosphere
- ☐ b. Oceans
- ☒ c. Glaciers
- ☐ d. Lakes and streams

3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?

- ☐ a. Rainfall and surface runoff into the lake
- ☐ b. Seasonal high water from the Mississippi River
- ☒ c. Ground water from beneath the surface

4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.

- ☐ a. A= evaporation, B= deposition, C= sublimation
- ☒ b. A = condensation, B= precipitation, C= evaporation
- ☐ c. A= sublimation, B= precipitation, C= evaporation
- ☐ d. A = precipitation, B= freezing, C= condensation

5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?

- ☐ a. Liquid water from the pot condenses
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- ☐ c. Water vapor from the pot condenses
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6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?

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A43819247

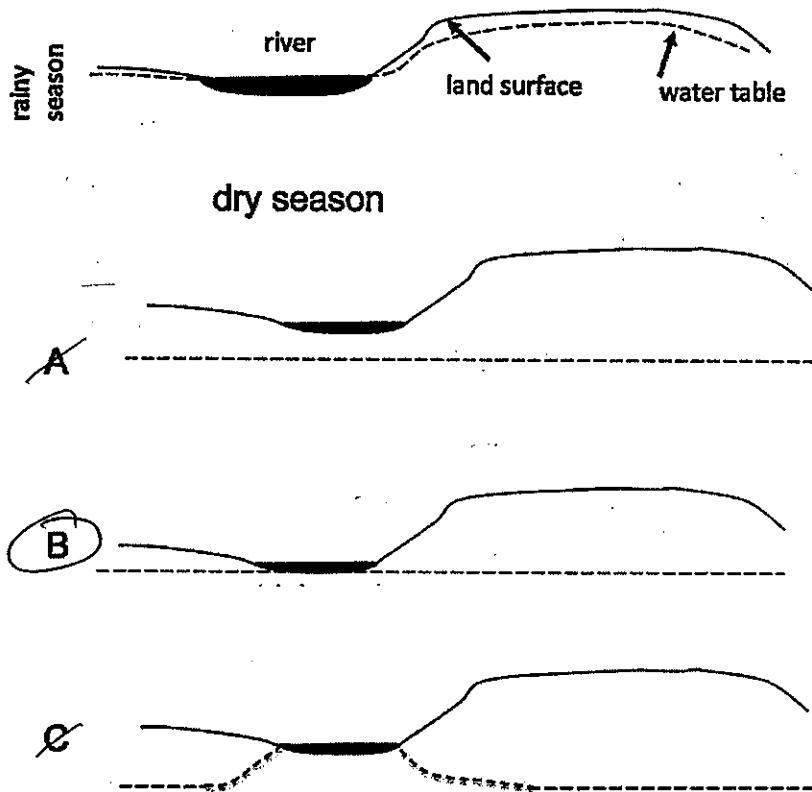
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

2

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
b. A = gravitational, B= gravitational, C= thermal
c. A = gravitational, B= thermal, C= thermal
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8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?

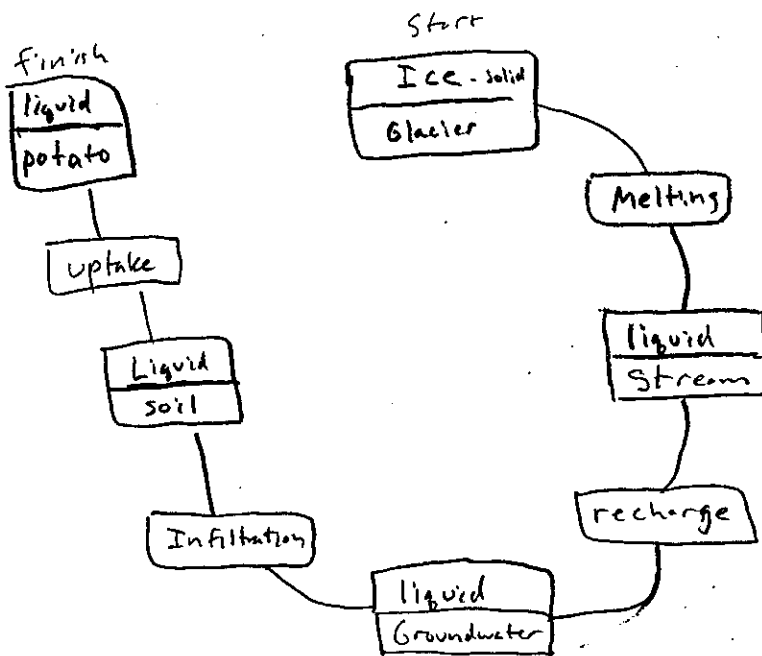


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a. been greater
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c. remained the same
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a. Plants convert biomass into energy
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A43819247

SHORT ANSWER. 25 points each (50 points total)

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25

A43819247

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$\uparrow T, \downarrow D$ $\uparrow D, \uparrow P$

Thermohaline circulation in oceans would not change if polar ice contained more salt than the surrounding seawater from which it freezes. Since fresh water is less dense

than salt water, fresh water stays atop salt water. polar

? Ice comes from the equatorial region during ocean circulation.

In ocean circulation, warm water in the equatorial region makes its way up to the polar regions due to density/pressure

differences. More temperature means less density, and salt is denser than fresh water, so salt water stays below

fresh water. Therefore the ice would continue to contain less salt than the surrounding seawater from which it freezes.

BUT if ... ?

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- c. They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

25 42

YOUR SCORE:

67

STUDENT ID #: A42097647; GROUP #: 13

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?

8

- ~~a. Water molecules become larger~~
- ☒ b. Gaseous water becomes liquid water
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- ~~d. Lakes and streams~~

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A42097647

ISP 203A: GLOBAL CHANGE

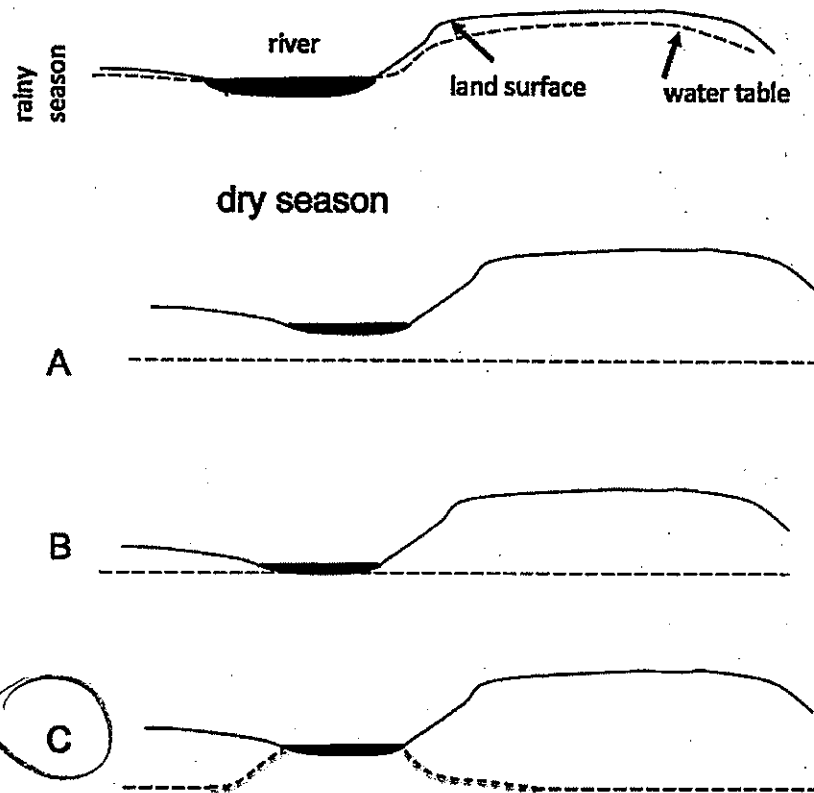
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

2

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

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 c. A = gravitational, B= thermal, C= thermal
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8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



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10. What happens when plants respire?

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A42097647

ISP 203A: GLOBAL CHANGE

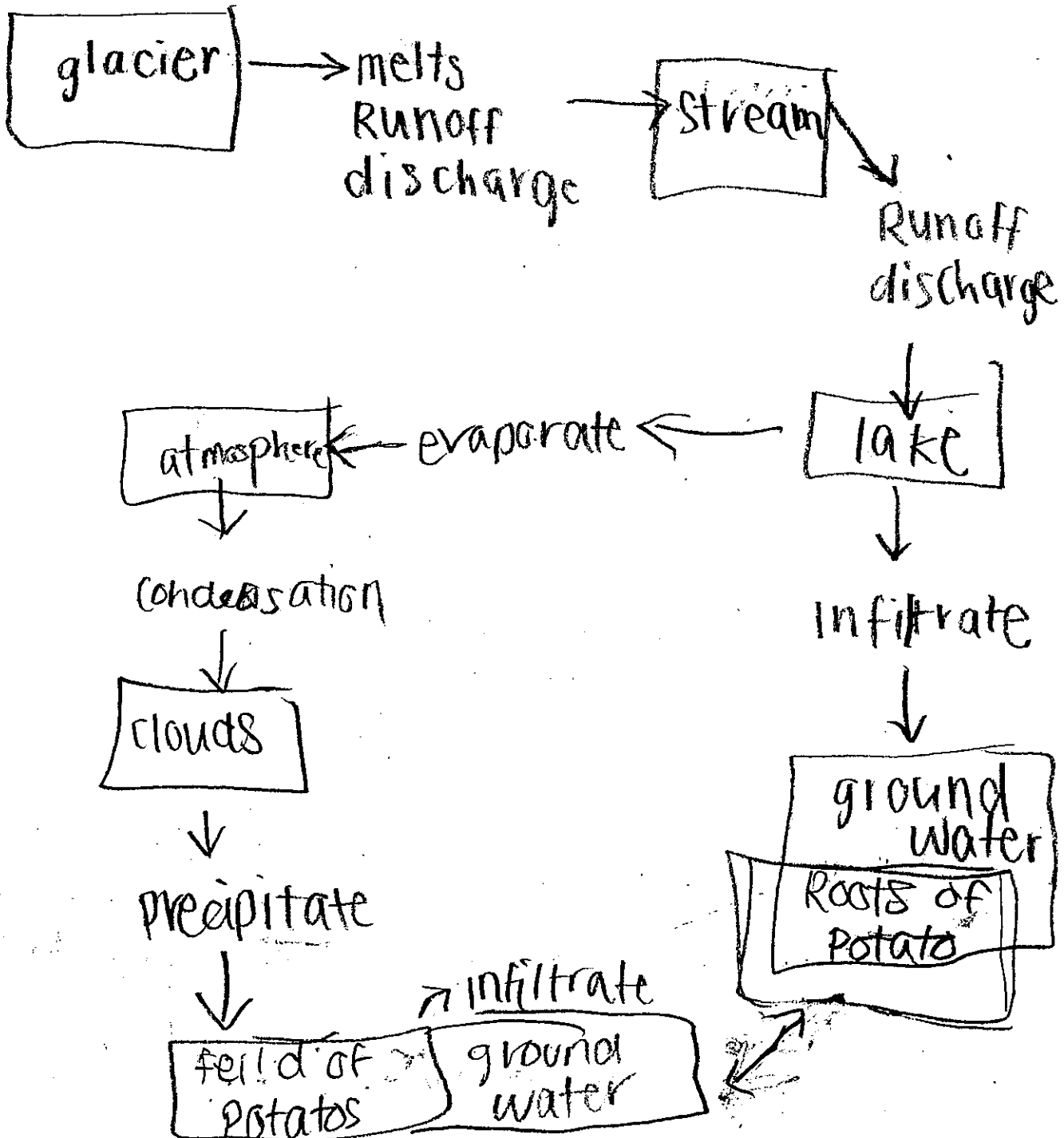
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

3

SHORT ANSWER. 25 points each (50 points total)

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A42097647

ISP 203A: GLOBAL CHANGE

EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

4

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- The energy that is causing movement or transformation of water.

15 thermohaline causes warmth from equator to circulate to polar regions & the cold to circulate back to the equator through convection, since warm air rises from less density and cool air sinks, all caused by heat temperatures and winds from solar radiation. If polar ice contained more salt ~~more~~ the circulation would change ^{now?} since salt water sinks the warm water to cold, and the more salt ~~the~~ the more cold water, and freezing.

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- c. They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

- I apologize for my handwriting, I tried my best!
40 xelsey 37

YOUR SCORE:

77

STUDENT ID #: A42096024; GROUP #: 13

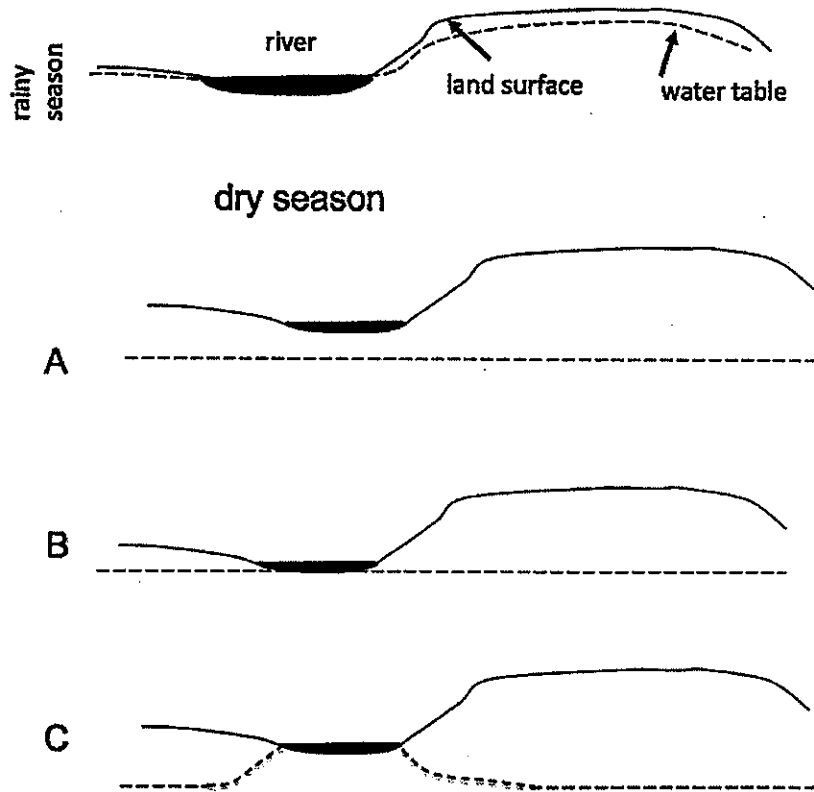
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

- 8
1. What happens when water molecules condense?
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 - c. A= sublimation, B= precipitation, C= evaporation
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 - c. Water vapor from the pot condenses
 - d. Water vapor from the pot evaporates
 6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
 - ☒ a. This is what one would predict with global warming
 - b. This is the opposite of what one would predict with global warming
 - c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
b. A = gravitational, B= gravitational, C= thermal
c. A = gravitational, B= thermal, C= thermal
d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
b. been less
c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
b. Plants convert energy into biomass
c. Plants release energy

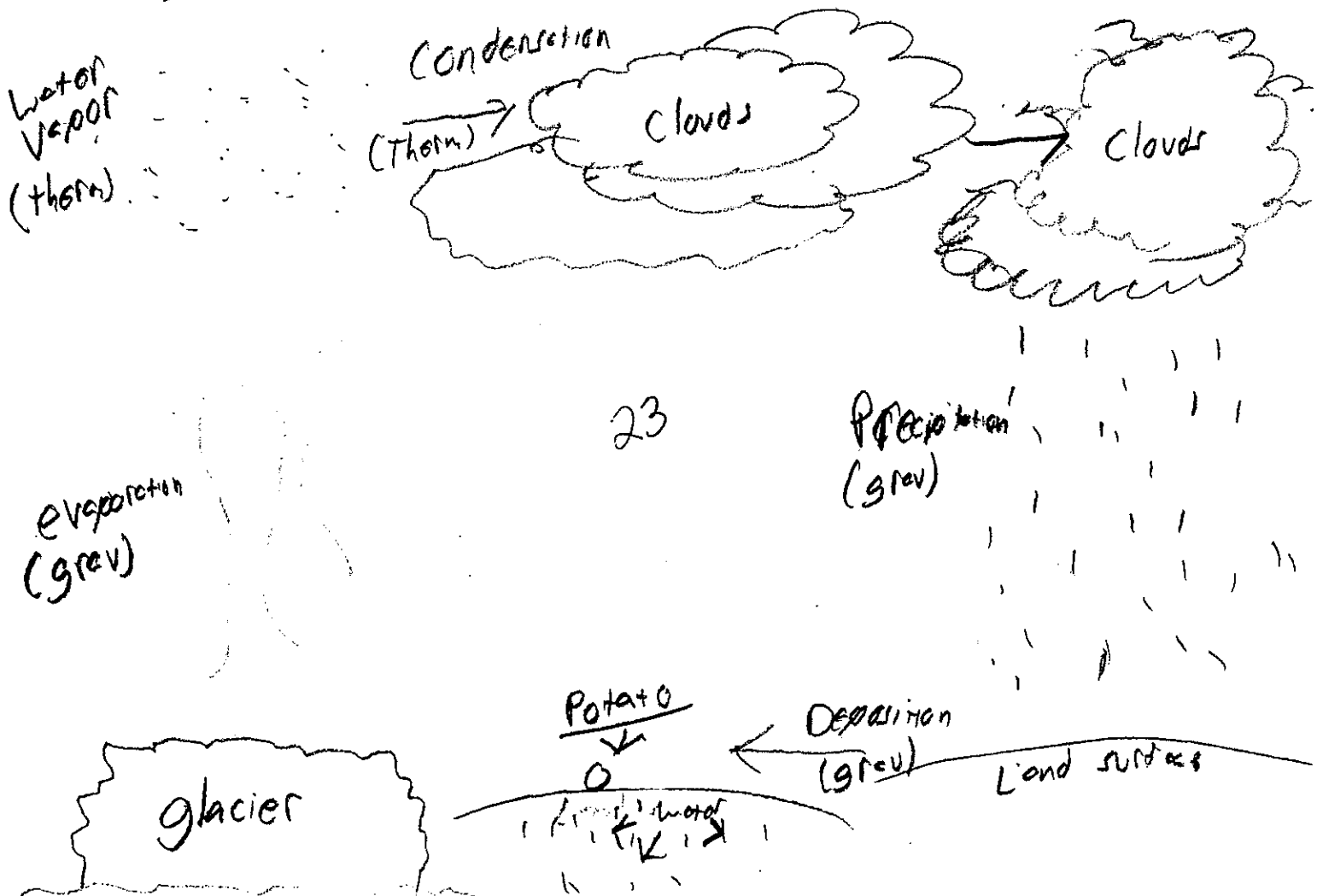
A42096024

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water

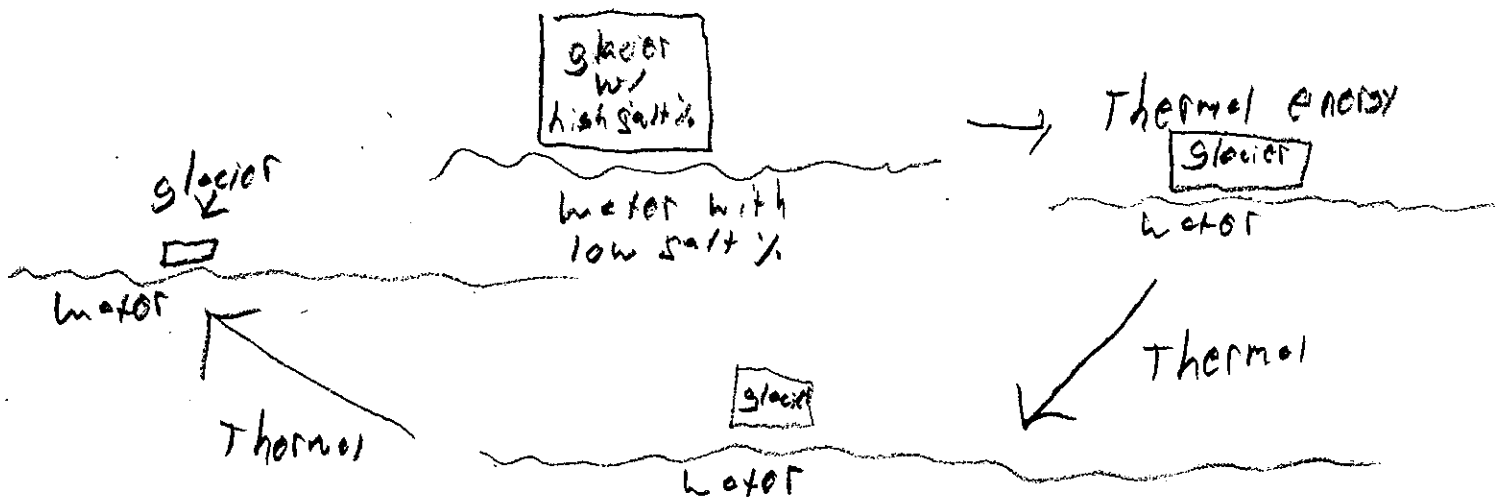
1. ~~Evaporation~~ ^{or liquid H₂O} from glacier ^(ICE) to atmosphere ^{to liquid water?}
2. Condensation from water vapor in atmosphere to cloud ^(Thermal)
3. Precipitation from cloud to land surface ^(gravitational)
4. Deposition of liquid H₂O from surface to groundwater ^(gravitational)
5. End in potato



2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - The energy that is causing movement or transformation of water.

The thermohaline circulation cycle in oceans would speed up. If the glaciers contained more salt than the surrounding seawater, said glaciers would have a higher melting point. What would result would be exponentially quicker melting as the glaciers release more and more water and said water further increases the ocean's temp. resulting in more melting.

2



- 2 EXTRA CREDIT (2 points)
- EC. How are burning wood and respiration similar?
- They both destroy matter during energy conversion
 - They both convert thermal energy into gravitational energy
 - They both convert chemical energy into thermal energy
 - They both convert kinetic energy into potential energy.

40 27

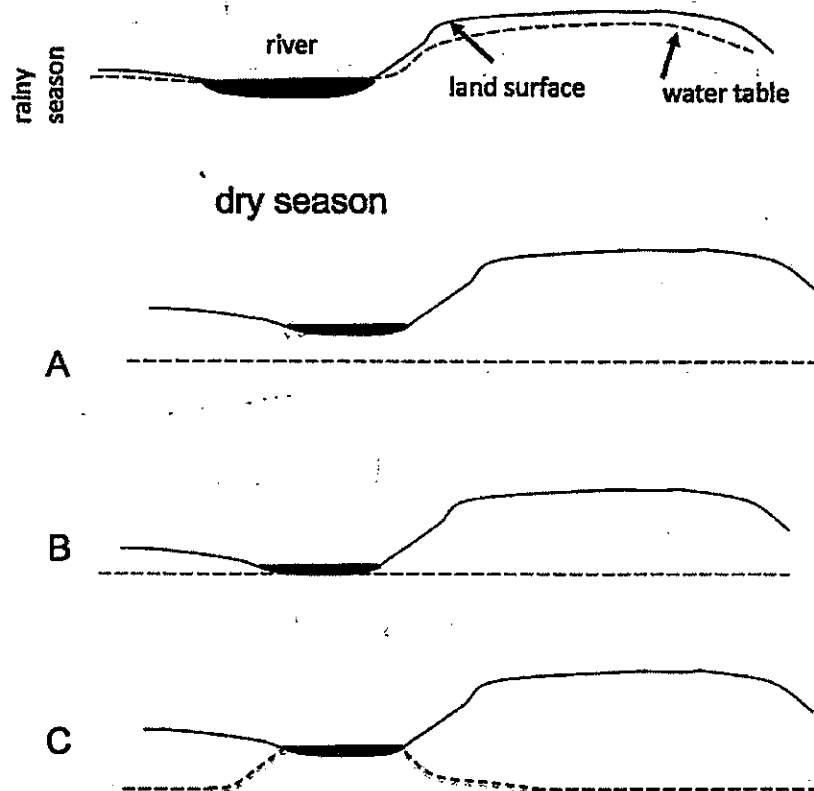
YOUR SCORE:

67

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

~~XXXXXXXXXXXX~~
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

1

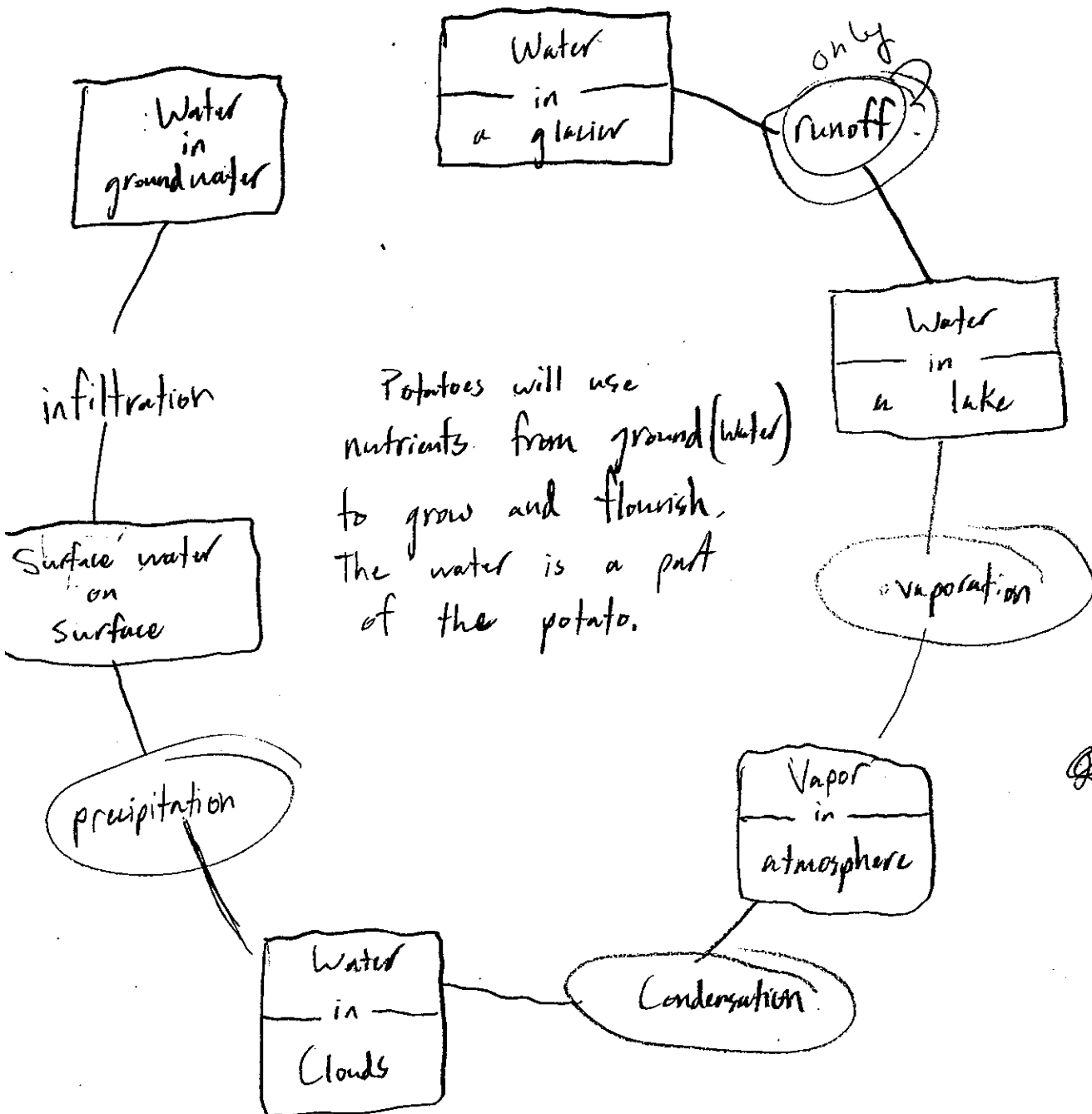
STUDENT ID #: A 42123279 ; **GROUP #:** 13

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 9
- Water molecules become larger
 - Gaseous water becomes liquid water
 - Hydrogen and oxygen atoms combine to form liquid water
 - The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
- The atmosphere
 - Oceans
 - Glaciers
 - Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
- Rainfall and surface runoff into the lake
 - Seasonal high water from the Mississippi River
 - Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of ____A____, then becomes water in a glacier through the process of ____B____, and then becomes water in clouds through the process of ____C____.
- A= evaporation, B= deposition, C= sublimation
 - A = condensation, B= precipitation, C= evaporation
 - A= sublimation, B= precipitation, C= evaporation
 - A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
- Liquid water from the pot condenses
 - Liquid water from the pot evaporates
 - Water vapor from the pot condenses
 - Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
- This is what one would predict with global warming
 - This is the opposite of what one would predict with global warming
 - Predictions about global warming do not address global precipitation.

SHORT ANSWER. 25 points each (50 points total)

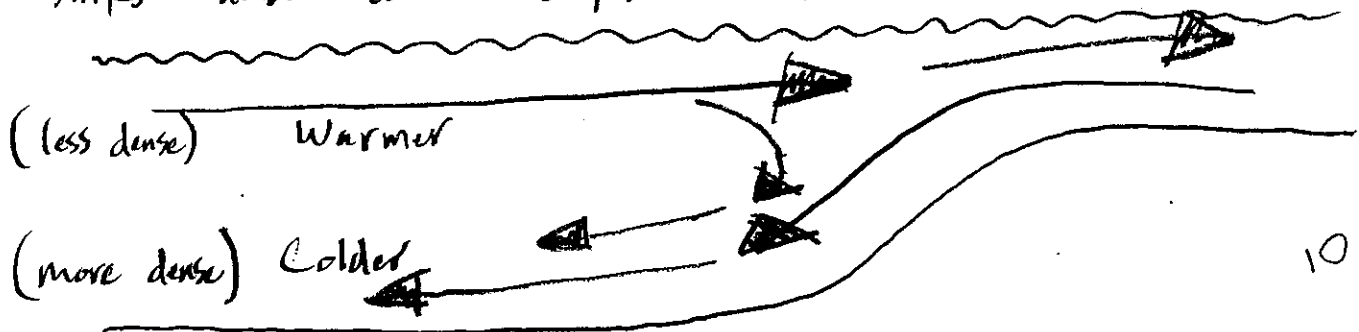
1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- Water phase at each step in the journey
 - A name for each process that moves or transforms water



A42123279

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - The energy that is causing movement or transformation of water.

Circulation is happening due to density differences of warm and cold haline liquid (sea water). Cold water sinks and warm water rises. ~~not sea~~



If polar ice contained more salt than surrounding water, the ice would become more dense and sink. This could potentially create cooler water at lower temperatures. Overall thermohaline circulation temperature would decrease. Colder water closer to the sea floor would stay cold longer (due to the ice) and surface water would continue to be warmed by the sun.

EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

45 28

YOUR SCORE:

73

STUDENT ID #: A43219269; GROUP #: 14

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?

- a. Water molecules become larger
- ☒ b. Gaseous water becomes liquid water
- c. Hydrogen and oxygen atoms combine to form liquid water
- ☒ d. The temperature of water molecules decreases

2. Which of the following is the largest freshwater reservoir

- a. The atmosphere
- b. Oceans
- ☒ c. Glaciers
- d. Lakes and streams

3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?

- ☒ a. Rainfall and surface runoff into the lake
- b. Seasonal high water from the Mississippi River
- ☒ c. Ground water from beneath the surface

4. Fill in the blanks. Water in the ^{gas}atmosphere becomes water in a ^{liquid}cloud through the process of condensation, then becomes water in a ^{solid}glacier through the process of deposition and then becomes water in clouds through the process of sublimation.

- ☒ a. A = evaporation, B = deposition, C = sublimation
- ☒ b. A = condensation, B = precipitation, C = evaporation
- ☒ c. A = sublimation, B = precipitation, C = evaporation
- ☒ d. A = precipitation, B = freezing, C = condensation

5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?

- a. Liquid water from the pot condenses
- ☒ b. Liquid water from the pot evaporates
- ☒ c. Water vapor from the pot condenses
- d. Water vapor from the pot evaporates

6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?

- ☒ a. This is what one would predict with global warming
- b. This is the opposite of what one would predict with global warming
- c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A = chemical, B = thermal, C = thermal
b. A = gravitational, B = gravitational, C = thermal
c. A = gravitational, B = thermal, C = thermal
d. A = thermal, B = thermal, C = thermal

atmosphere. Gas. → clouds. Liquid.

Water → ice → gas
thermal.

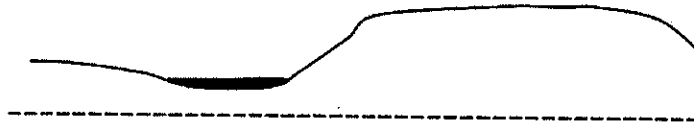
8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?

rainy season

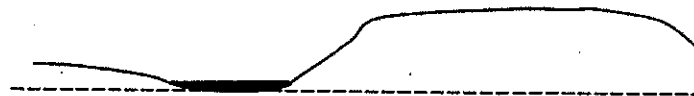


dry season

A



B



C



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:

- a. been greater
b. been less
c. remained the same

$$\frac{0.9}{1.0} = 0.9$$

10. What happens when plants respire?

- a. Plants convert biomass into energy
b. Plants convert energy into biomass
c. Plants release energy

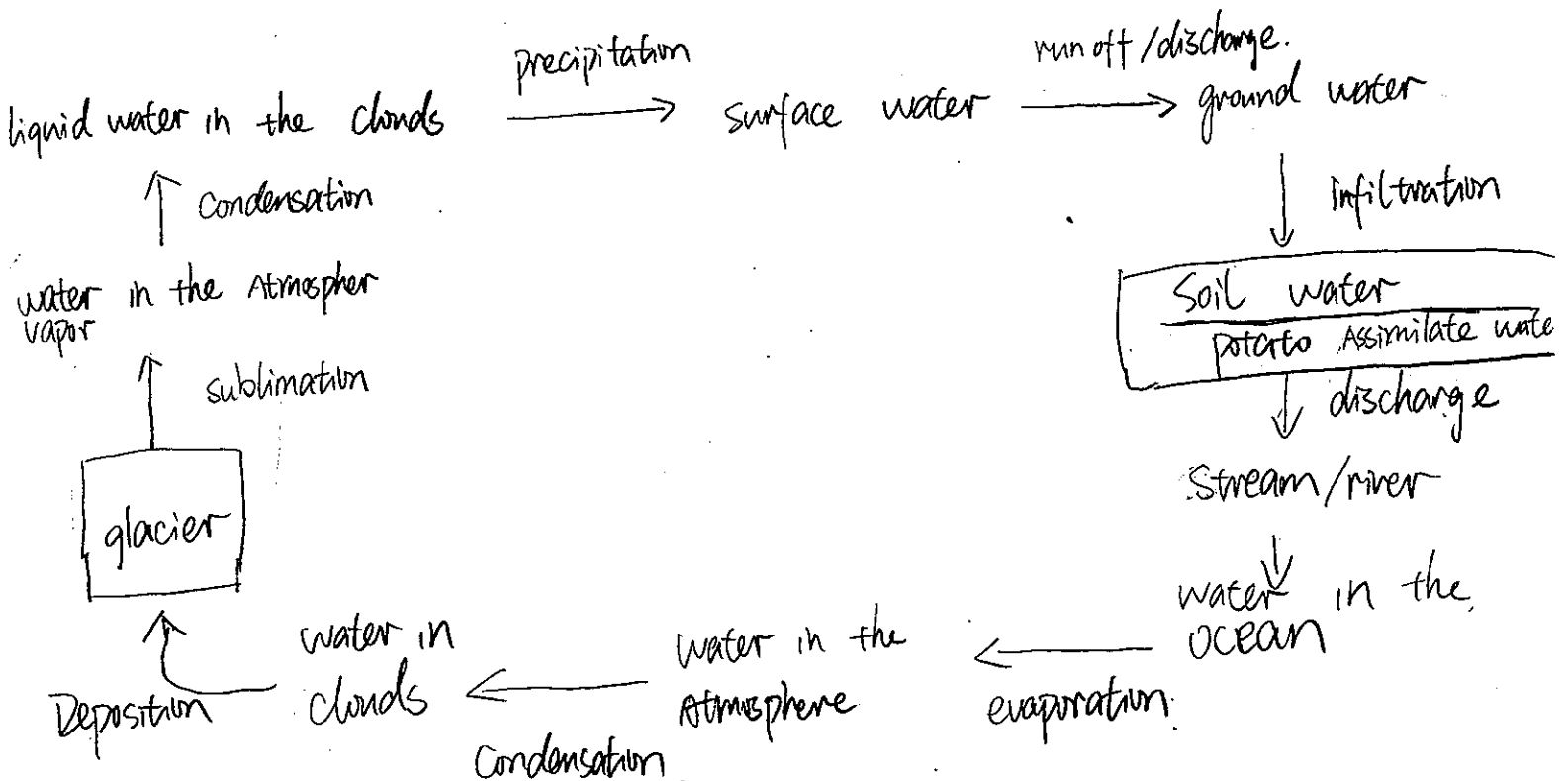
$$\frac{1.1}{1.1} = 1$$

A43219269

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water



25

A43219269

ISP 203A: GLOBAL CHANGE

EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

4

2. When ice forms from seawater, the ice contains less salt than the remaining water.

Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

Water circulation happens due to the temperature and density. When temperature increases, water molecules move faster, density decreases. Then wind drives the surface current to move, cold water rise up and warm water sink down. If polar ice contained more salt than the surrounding seawater from which it freezes, which mean the density of seawater will increase and the temperature will decrease. In this way, polar ice are becoming denser and it's easy to freeze. This might slow down the circulation of water movement. During the water freeze process, liquid water need more energy and heat to condense, into solid ice, it converts thermal energy into potential energy. When ice melts, it release energy, the thermal energy decreases,

~~10~~ 10

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- ☒ They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

35 37
YOUR SCORE:
72

STUDENT ID #: A433716720; GROUP #: 14

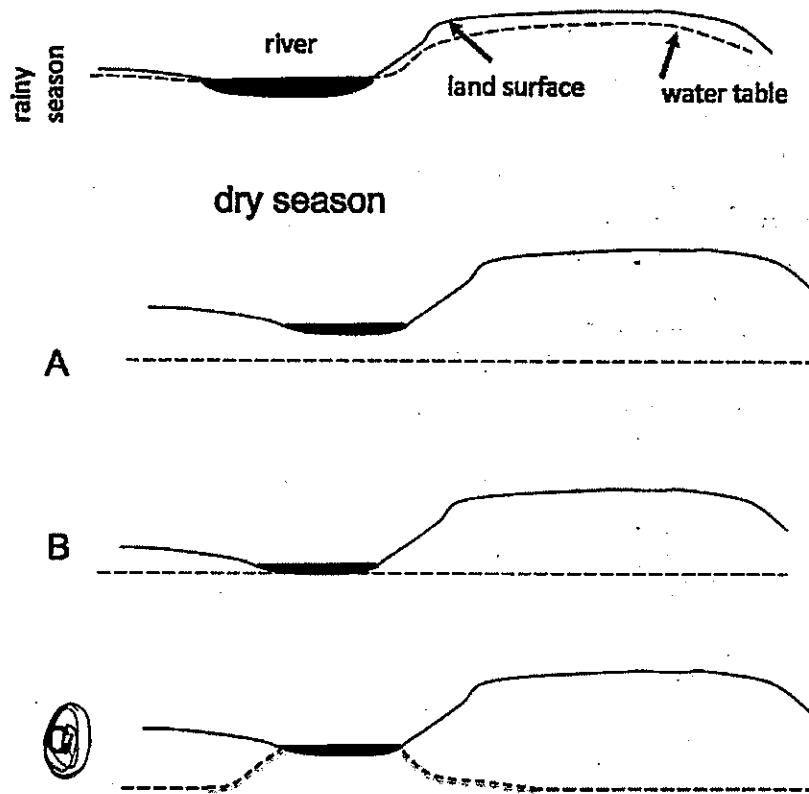
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?
a. Water molecules become larger
☒ b. Gaseous water becomes liquid water
c. Hydrogen and oxygen atoms combine to form liquid water
d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
a. The atmosphere
b. Oceans
☒ c. Glaciers
d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
a. Rainfall and surface runoff into the lake
b. Seasonal high water from the Mississippi River
☒ c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
a. A= evaporation, B= deposition, C= sublimation
☒ b. A = condensation, B= precipitation, C= evaporation
c. A= sublimation, B= precipitation, C= evaporation
d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
a. Liquid water from the pot condenses
b. Liquid water from the pot evaporates
☒ c. Water vapor from the pot condenses
d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
a. This is what one would predict with global warming
b. This is the opposite of what one would predict with global warming
☒ c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
b. A = gravitational, B= gravitational, C= thermal
☒ c. A = gravitational, B= thermal, C= thermal
d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?

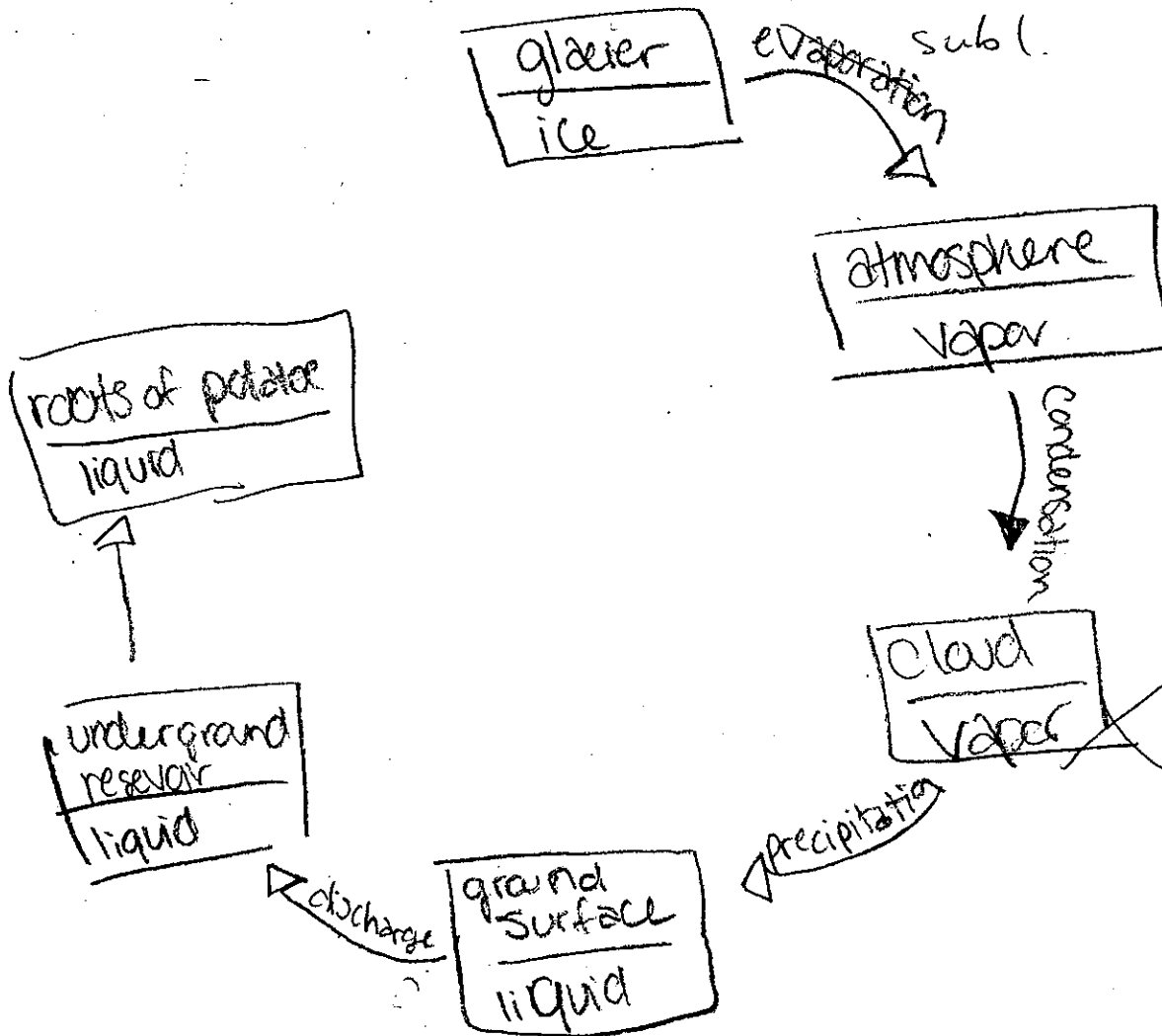


9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
☒ b. been less
c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
b. Plants convert energy into biomass
☒ c. Plants release energy

A43376720

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- a. Water phase at each step in the journey
 - b. A name for each process that moves or transforms water



A43376720

ISP 203A: GLOBAL CHANGE

EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

4

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- a. Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - b. The energy that is causing movement or transformation of water.

Circulation happens because warm water is less dense than cold water & warm water stays near the surface but sinks when it cools down also water is colder at polar regions which causes it move down toward equatorial regions which warms water and causes it to move toward the polar regions again. If polar ice contained more salt than the surrounding seawater the ice would melt faster because thermal energy from the salt would keep melting it & there would be more warmer water than colder water. + ?

10

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- a. They both destroy matter during energy conversion
- b. They both convert thermal energy into gravitational energy
- ☒ c. They both convert chemical energy into thermal energy
- d. They both convert kinetic energy into potential energy.

45 30

YOUR SCORE:

75

STUDENT ID #: A39222014; GROUP #: 14

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?

8

- a. Water molecules become larger
- ☒ b. Gaseous water becomes liquid water
- c. Hydrogen and oxygen atoms combine to form liquid water
- d. The temperature of water molecules decreases

2. Which of the following is the largest freshwater reservoir

- ☒ a. The atmosphere
- ~~b. Oceans~~
- ☒ c. Glaciers
- ~~d. Lakes and streams~~

3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?

- a. Rainfall and surface runoff into the lake
- b. Seasonal high water from the Mississippi River
- ☒ c. Ground water from beneath the surface

4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.

- ~~a. A= evaporation, B= deposition, C= sublimation~~
- ☒ b. A = condensation, B= precipitation, C= evaporation
- ~~c. A= sublimation, B= precipitation, C= evaporation~~
- ~~d. A = precipitation, B= freezing, C= condensation~~

5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?

- ☒ a. Liquid water from the pot condenses
- b. Liquid water from the pot evaporates
- ~~c. Water vapor from the pot condenses~~
- ~~d. Water vapor from the pot evaporates~~

6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?

- ☒ a. This is what one would predict with global warming
- b. This is the opposite of what one would predict with global warming
- c. Predictions about global warming do not address global precipitation.

A39222014

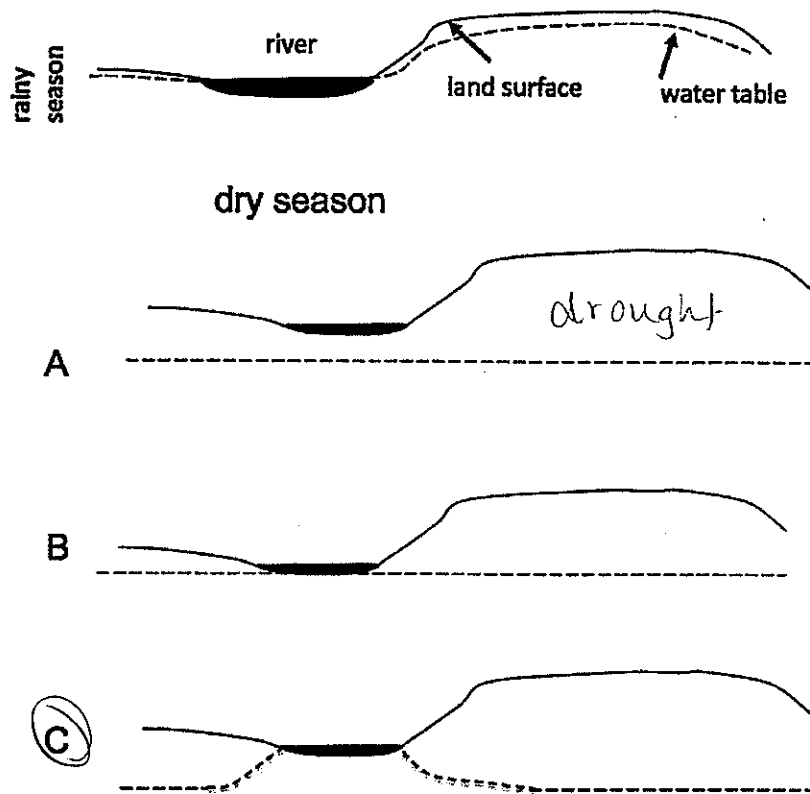
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

2

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- ☒ a. A = chemical, B = thermal, C = thermal
b. A = gravitational, B = gravitational, C = thermal
☒ c. A = gravitational, B = thermal, C = thermal
☒ d. A = thermal, B = thermal, C = thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- ☒ a. been greater
b. been less
c. remained the same
10. What happens when plants respire?
- ☒ a. Plants convert biomass into energy
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c. Plants release energy

A39222014

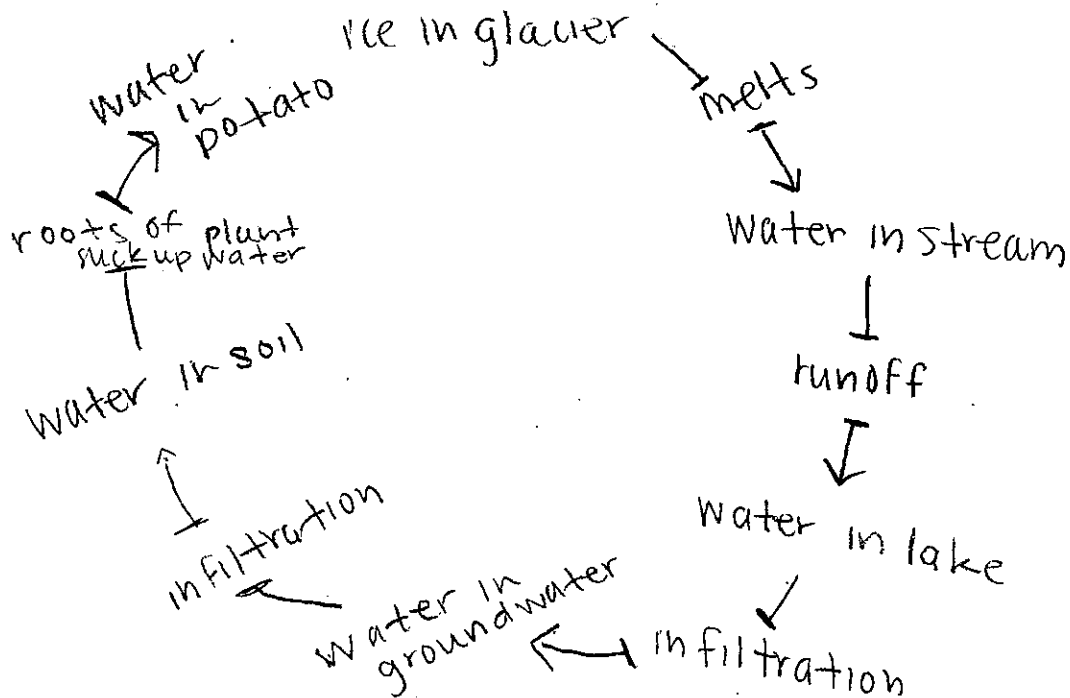
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

3

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water



A39222014

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

4

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

Since polar water contains less salt than seawater it is less dense. If polar ice contained more salt than seawater it would be more dense, therefore would sink when it melts. The thermohaline circulation would be changed because the colder, saltier water would more rapidly sink to the bottom. Currently, why? thermohaline circulation works to move warmer surface water to cooler climates. [If there is more cooler, saltier water sinking to the bottom of the ocean, warmer water would be pushed to the surface, consequently raising water temperatures.]?

15

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- ☒ They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

40 37

YOUR SCORE:

77

STUDENT ID #: A43424499; GROUP #: 14

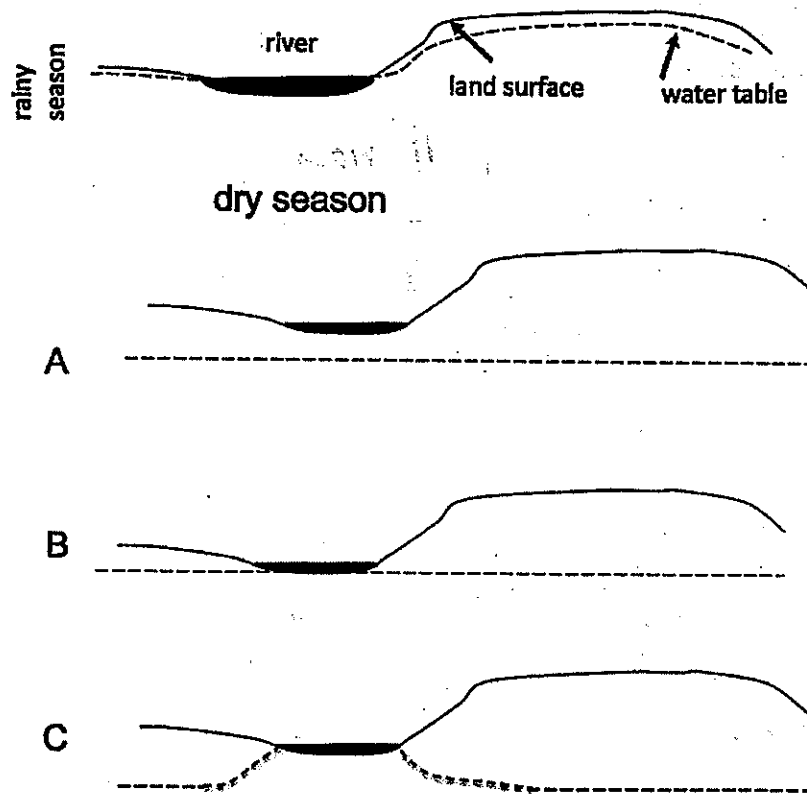
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 8
 - a. Water molecules become larger
 - b. Gaseous water becomes liquid water
 - c. Hydrogen and oxygen atoms combine to form liquid water
 - d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
 - a. The atmosphere
 - b. Oceans
 - c. Glaciers
 - d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
 - a. Rainfall and surface runoff into the lake
 - b. Seasonal high water from the Mississippi River
 - c. Ground water from beneath the surface/ 0
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
 - a. A= evaporation, B= deposition, C= sublimation
 - b. A = condensation, B= precipitation, C= evaporation
 - c. A= sublimation, B= precipitation, C= evaporation
 - d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
 - a. Liquid water from the pot condenses
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 - c. Water vapor from the pot condenses
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6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
 - a. This is what one would predict with global warming
 - b. This is the opposite of what one would predict with global warming
 - c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
 b. A = gravitational, B= gravitational, C= thermal
 c. A = gravitational, B= thermal, C= thermal
 d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



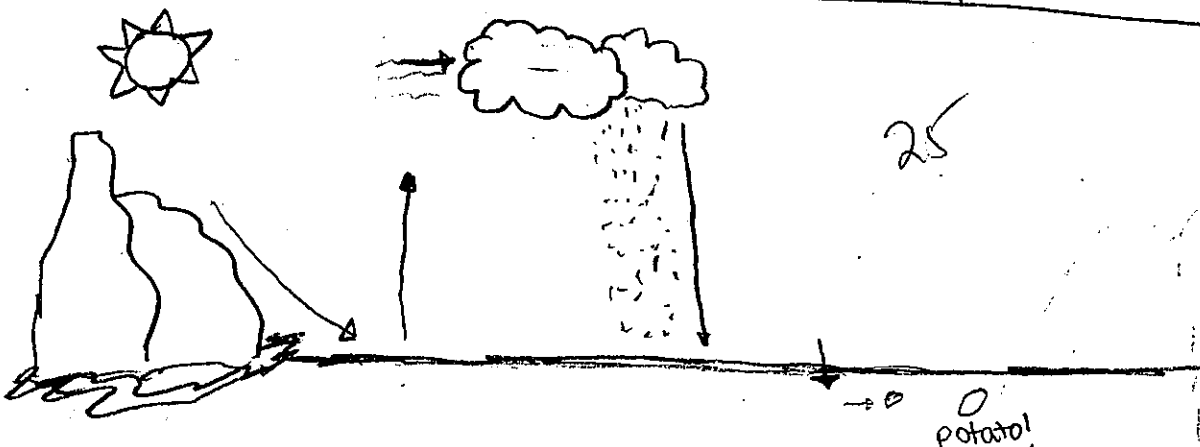
9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 b. been less
 c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 b. Plants convert energy into biomass
 c. Plants release energy

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water

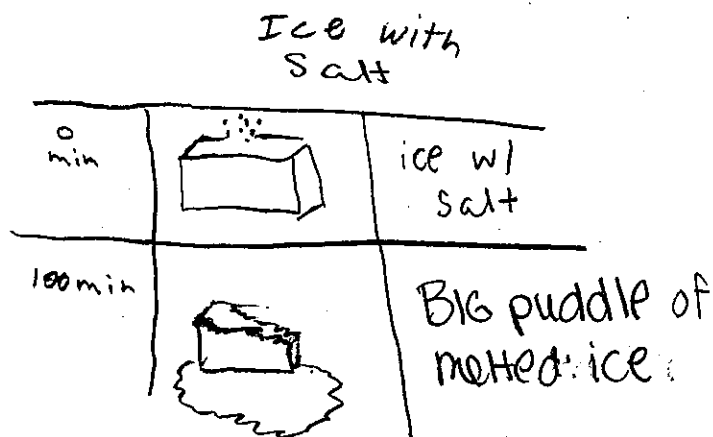
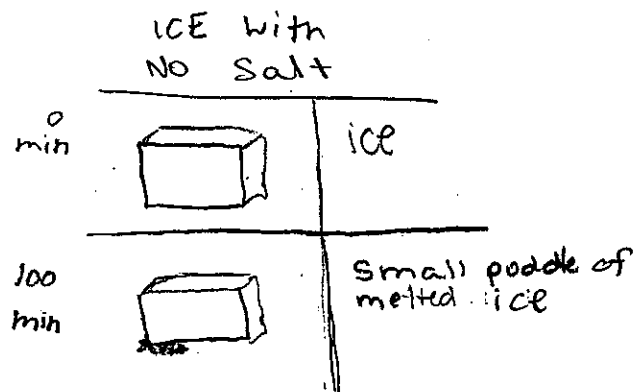
1. water melts from a glacier and is on top of the ground	A. liquid [run off]	B. gravitational energy
2. water is evaporated and goes into atmosphere	A. water vapor [evaporation]	B. thermal energy
3. later, water ^{condenses (cloud)} precipitates and returns to ground	A. liquid water [precipitation]	B. gravitational energy
4. Water soaks into soil	A. liquid water [run off]	B. gravitational energy
5. Potato seed soaks up water	A. Liquid water	B. chemical potential energy



2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - The energy that is causing movement or transformation of water.

less salt more salt

- If polar ice contained more salt than the surrounding sea water, the thermohaline circulation would speed up. 2
- It would speed up because salt melts ice, therefore, the salty polar ice would melt faster than non-salty polar ice
- Thus, causing more run off and available salt water to be evaporated.



2

EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- ☒ They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

40 29

YOUR SCORE:

69

STUDENT ID #: A41021960; GROUP #: 15

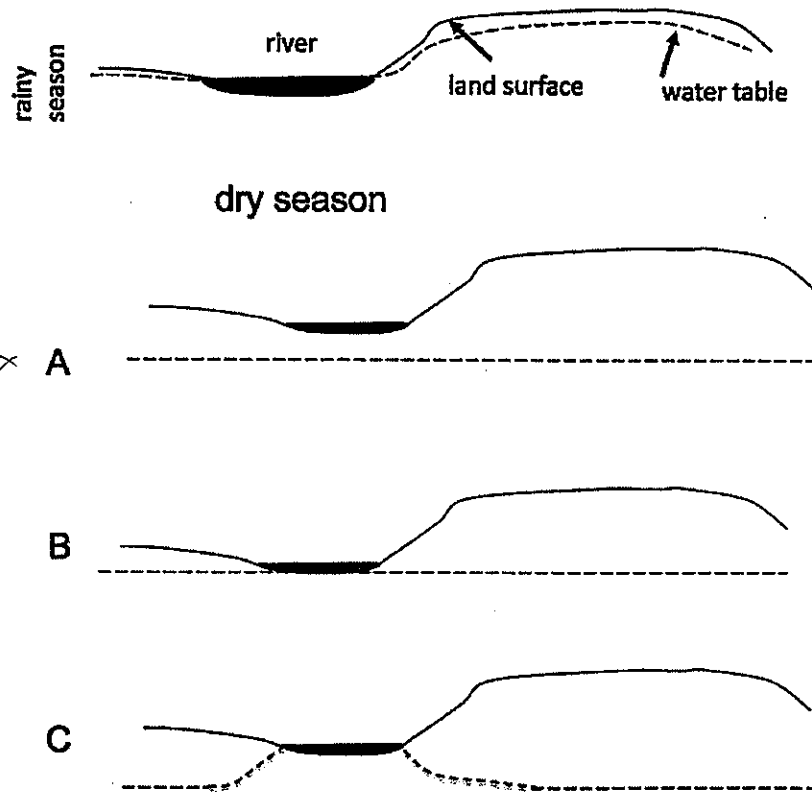
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?
a. Water molecules become larger
b. Gaseous water becomes liquid water
c. Hydrogen and oxygen atoms combine to form liquid water
d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
a. The atmosphere
b. Oceans
c. Glaciers
d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
a. Rainfall and surface runoff into the lake[<]
b. Seasonal high water from the Mississippi River^x
c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of ____A____, then becomes water in a glacier through the process of ____B____, and then becomes water in clouds through the process of ____C____.
^x a. A= evaporation, B= deposition, C= sublimation
b. A = condensation, B= precipitation, C= evaporation
^x c. A= sublimation, B= precipitation, C= evaporation
^x d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
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6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
a. This is what one would predict with global warming
b. This is the opposite of what one would predict with global warming
c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- ☒ a. A= chemical, B= thermal, C= thermal
- ☒ b. A = gravitational, B= gravitational, C= thermal
- ☐ c. A = gravitational, B= thermal, C= thermal
- ☒ d. A= thermal, B= thermal, C= thermal

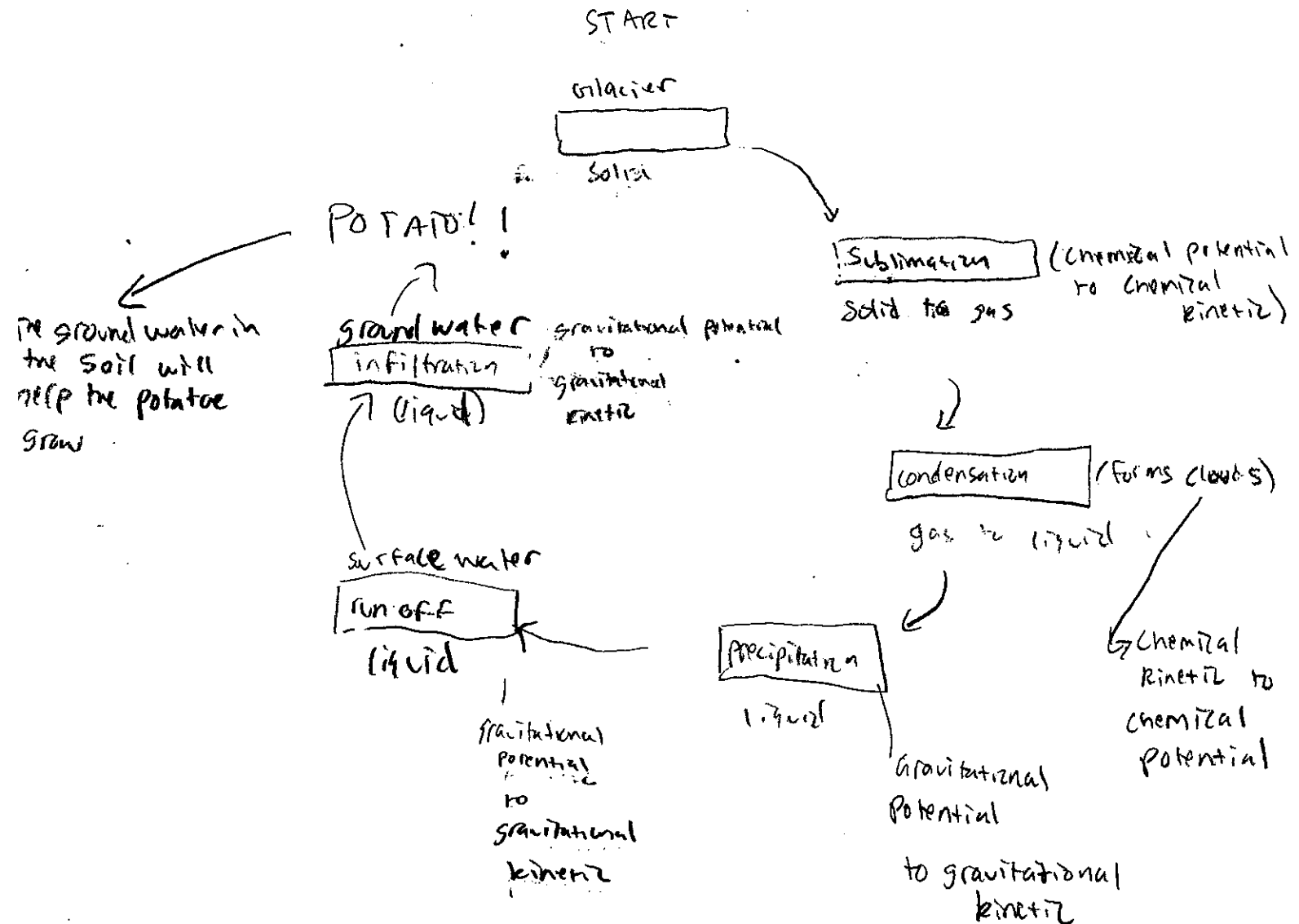
8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



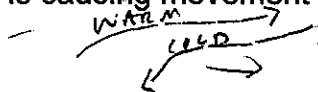
9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
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Circulation of water is a result of buoyancy and density. When temperature increases, this causes molecules to move faster, which makes things less dense. Water that is warmer is less dense than water that is cold. Therefore, through buoyancy and density, when warm water comes into contact with cold water, the cold water sinks while the warm water rises. Another factor of density in water is the amount of salinity. Salt water is more dense than fresh water due to the amount of salt in it, and therefore sinks below fresh water when the two come into contact.

If polar ice contained more salt than the surrounding seawater from which it freezes, the polar ice would sink below the surrounding water. During thermohaline circulation, warm water from the equator is rising to the poles where it eventually cools and sinks back down to the equator. With this increase in salt in the polar ice, thermohaline circulation would still occur, because warm waters would still be rising to the poles, where it would cool and sink down. Polar ice, being more dense, would sink down to the equator where it would eventually melt.

- 2 EXTRA CREDIT (2 points)
EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

35 49

YOUR SCORE:

84

STUDENT ID #: A40641748; GROUP #: 15

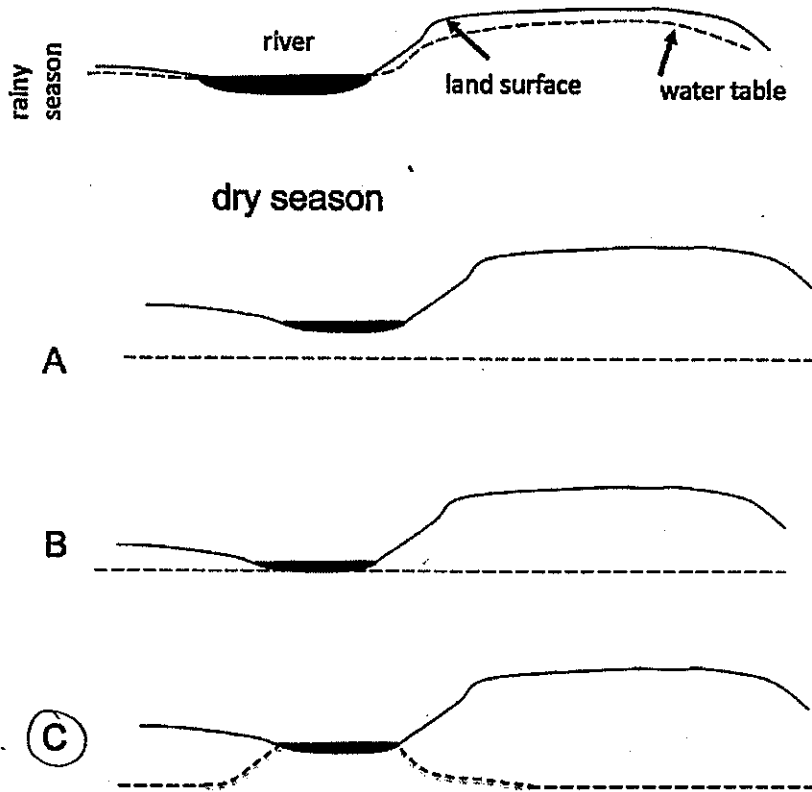
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 8
 - a. Water molecules become larger
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 - d. The temperature of water molecules decreases
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 - ☒ c. Glaciers
 - d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
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 - d. A = precipitation, B= freezing, C= condensation
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- ☐ b. A = gravitational, B= gravitational, C= thermal
- ☒ c. A = gravitational, B= thermal, C= thermal
- ☐ d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



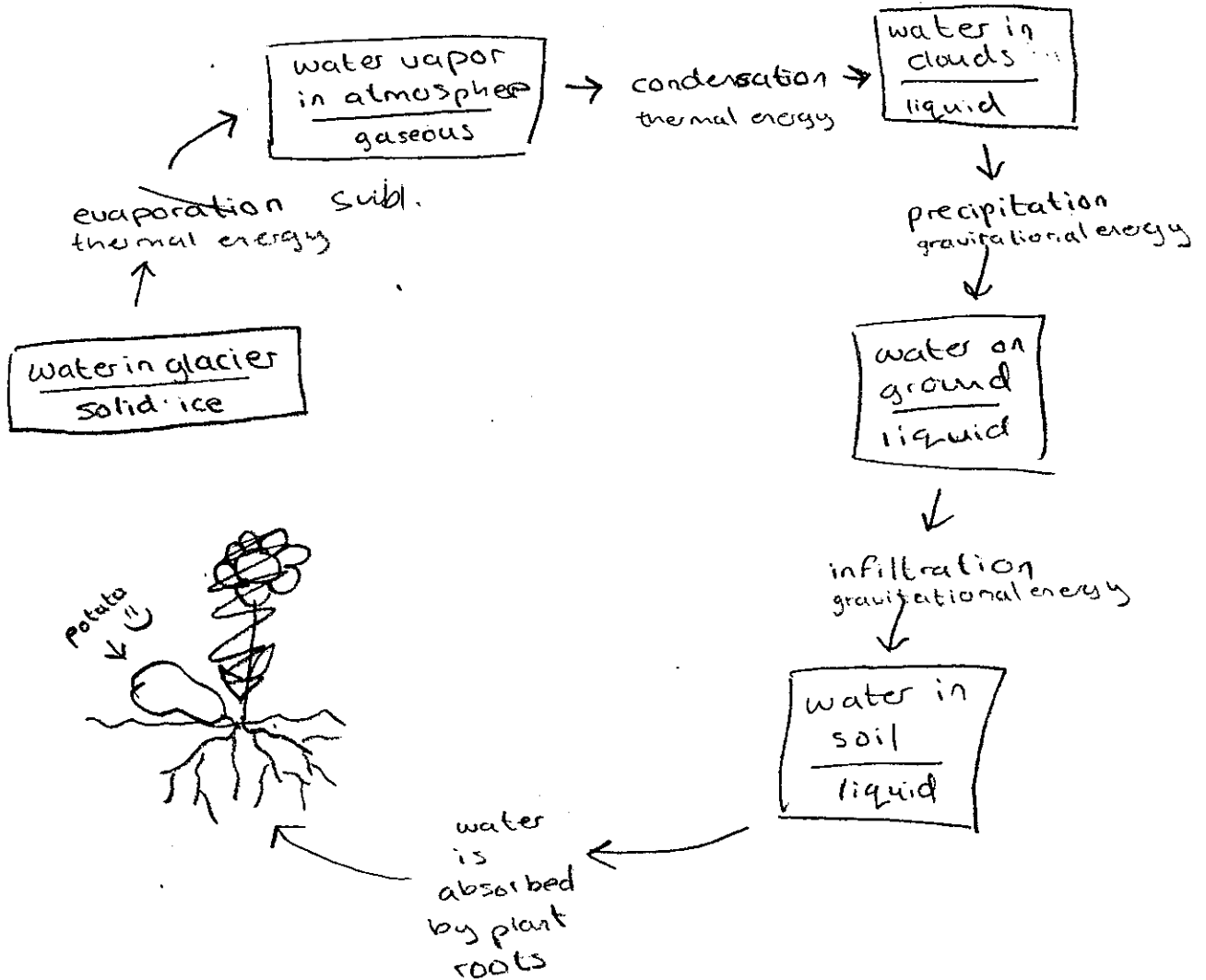
9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- ☒ a. been greater
 - ☐ b. been less
 - ☐ c. remained the same
10. What happens when plants respire?
- ☒ a. Plants convert biomass into energy
 - ☐ b. Plants convert energy into biomass
 - ☐ c. Plants release energy

A406 41748

SHORT ANSWER. 25 points each (50 points total)

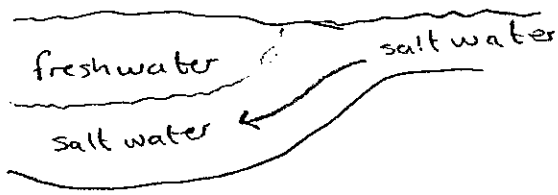
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- Water phase at each step in the journey
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22

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
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buoyancy: Fresh more buoyant
density: fresh less dense

10. Circulation is affected by the density of water and the temperature. Higher temperature is less dense and water with higher salinity is more dense because it contains more sodium ions. This is why when fresh water flows into seawater it floats on top because it is less dense. This is caused by gravitational energy because the state of the water hasn't changed, only its composition. If the polar ice contained more salt, the energy that causes movement & transformation wouldn't change. Dense water would still sink because of gravitational energy. Evaporation & condensation would still be caused by thermal energy. I don't think thermohaline circulation in oceans would change because more salt would not cause processes to slow down or speed up and the energy that causes these things to happen would stay the same.

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

40 34
YOUR SCORE:
74

STUDENT ID #: A4094500 5; GROUP #: 15

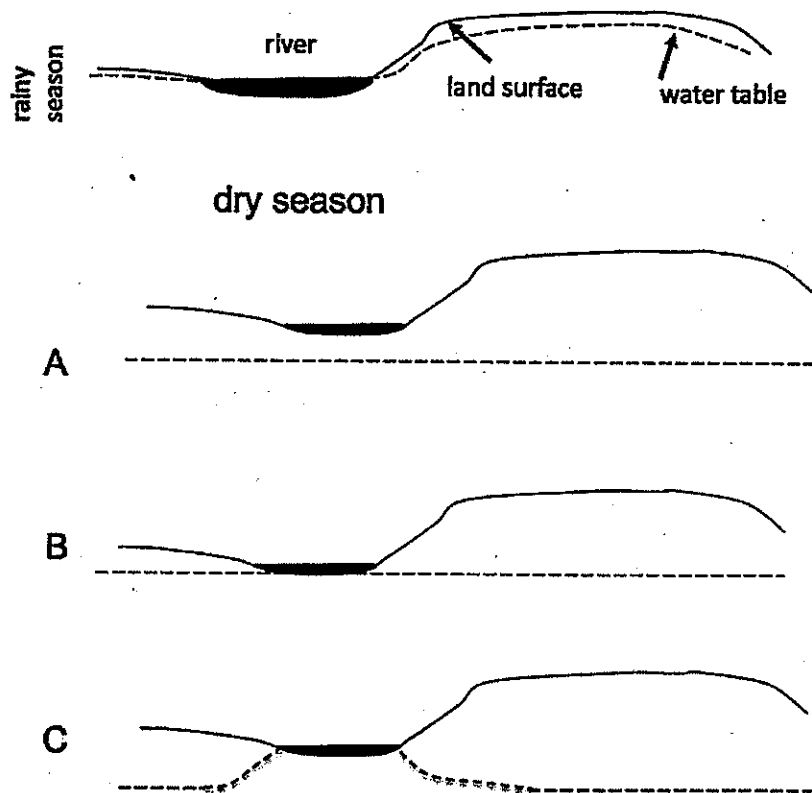
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 6
 - a. Water molecules become larger
 - b. Gaseous water becomes liquid water
 - c. Hydrogen and oxygen atoms combine to form liquid water
 - d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
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- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- a. Water phase at each step in the journey
 - b. A name for each process that moves or transforms water

When water is a part of a glacier it is solid. When temperature rises and the sun is shining parts of the glacier starts to melt and turn into liquid water. The water then travels in the ocean and some of it evaporates into the atmosphere. ^{as?} Thermal energy condenses it back into liquid in a cloud. Then gravitational energy brings the water down as precipitation. Some of the water soaks into the earth. The growing plants soak up the water in order to live and grow. A potato uses a lot of water.

A 40945005

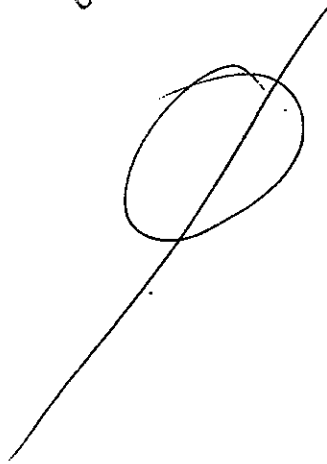
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

4

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

Circulation happens because the water is constantly moving. Water that contains a lot of salt does not freeze usually. The thermohaline circulation changes if polar ice contains more salt. The change is chemical.



2

EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- ☒ They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

30 24

YOUR SCORE:

54

STUDENT ID #: ~~XXXXXX~~ A42669701; GROUP #: 15

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?

8

- ☒ a. Water molecules become larger
- ☐ b. Gaseous water becomes liquid water
- ☐ c. Hydrogen and oxygen atoms combine to form liquid water
- ☐ d. The temperature of water molecules decreases

2. Which of the following is the largest freshwater reservoir

- ☒ a. ~~The atmosphere~~
- ☐ b. Oceans
- ☐ c. Glaciers
- ☐ d. Lakes and streams

3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?

- ☒ a. Rainfall and surface runoff into the lake
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4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of ____A____, then becomes water in a glacier through the process of ____B____, and then becomes water in clouds through the process of ____C____.

- ☐ a. A= evaporation, B= deposition, C= sublimation
- ☒ b. A = condensation, B= precipitation, C= evaporation
- ☐ c. A= sublimation, B= precipitation, C= evaporation
- ☐ d. A = precipitation, B= freezing, C= condensation

5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?

- ☐ a. Liquid water from the pot condenses
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- ☒ c. Water vapor from the pot condenses
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6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?

- ☒ a. This is what one would predict with global warming
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A42669701

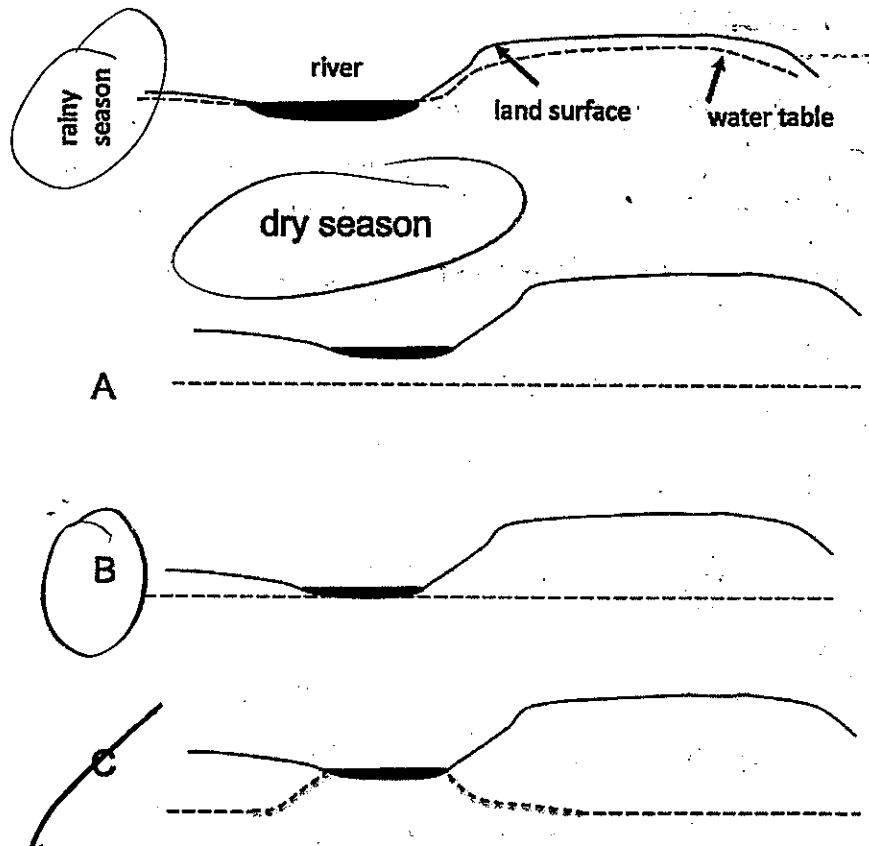
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

2

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
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8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:

- a. been greater
b. been less
c. remained the same

density
ice - 0.9
water - 1.0

10. What happens when plants respire?

- a. Plants convert biomass into energy
b. Plants convert energy into biomass
c. Plants release energy

A42669701

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water

Water begins as ice in a glacier. Thermal energy (solar radiation) causes sublimation: the water molecule is now vapor in the atmosphere.

~~water~~ The vapor cools and condenses and is now liquid in a cloud.

Gravitational energy causes liquid water in a cloud to become liquid water on the surface (precipitation). Gravitational energy causes

liquid water on surface to infiltrate the ground and become liquid groundwater.

The liquid water rises to a plant through evotranspiration, and is then consumed during the process of photosynthesis to become part of the plant's biomass.

25

A42669701

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

Thermohaline circulation occurs because of the spherical shape of the Earth. This causes differential heating, in which water near the equator receives more solar radiation than water near the poles. Thus solar radiation causes the movement and transformation of water. Hot water is less dense than cold water, and thus rises while cold water falls. Hot water near the equator has ↑ thermal energy, stays near surface as long as it's hot, and moves towards the poles. When it loses its thermal energy near the poles, it falls, and moves towards the equator where it receives ↑ thermal energy and cycles again.

If polar ice had more salt than the surrounding water, it would be more dense than the surrounding water, causing it to sink. This would mean the ice is in the water, rather than floating at the surface. This would allow for more thermal energy to travel from the liquid water to the ice. This would increase the overall volume of water in the oceans (sea level ↑); also, this would decrease the temp. of the polar water, since thermal energy would travel to the ice to reach equilibrium.

Effect on thermohaline circulation

The change in ice would cause an overall ↓ in temp. of ocean water. My suspicion is that the ~~effect~~ effect of this would be a general "slowing" of the cycle of movement of water increases. Most of water in oceans is caused by solar radiation; if the overall temp. of ocean water was lower, it would take more solar radiation to heat the surface water (mostly near equator), plus more time; this is the first step

2 EXTRA CREDIT (2 points)

- EC. How are burning wood and respiration similar? In thermohaline circ., and would effect
- They both destroy matter during energy conversion
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40 54

YOUR SCORE:

94

STUDENT ID #: 141944159; GROUP #: 16

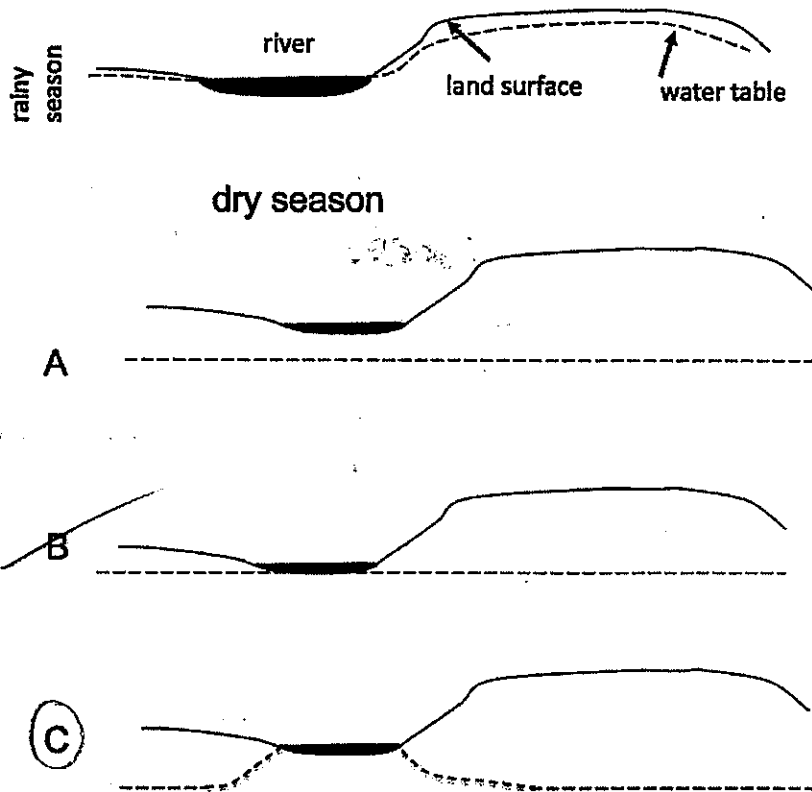
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4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A , then becomes water in a glacier through the process of B , and then becomes water in clouds through the process of C .
 - ☐ a. A= evaporation, B= deposition, C= sublimation
 - ☒ b. A = condensation, B= precipitation, C= evaporation
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c. remained the same

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a. Plants convert biomass into energy
b. Plants convert energy into biomass
c. Plants release energy

A41961459

ISP 203A: GLOBAL CHANGE

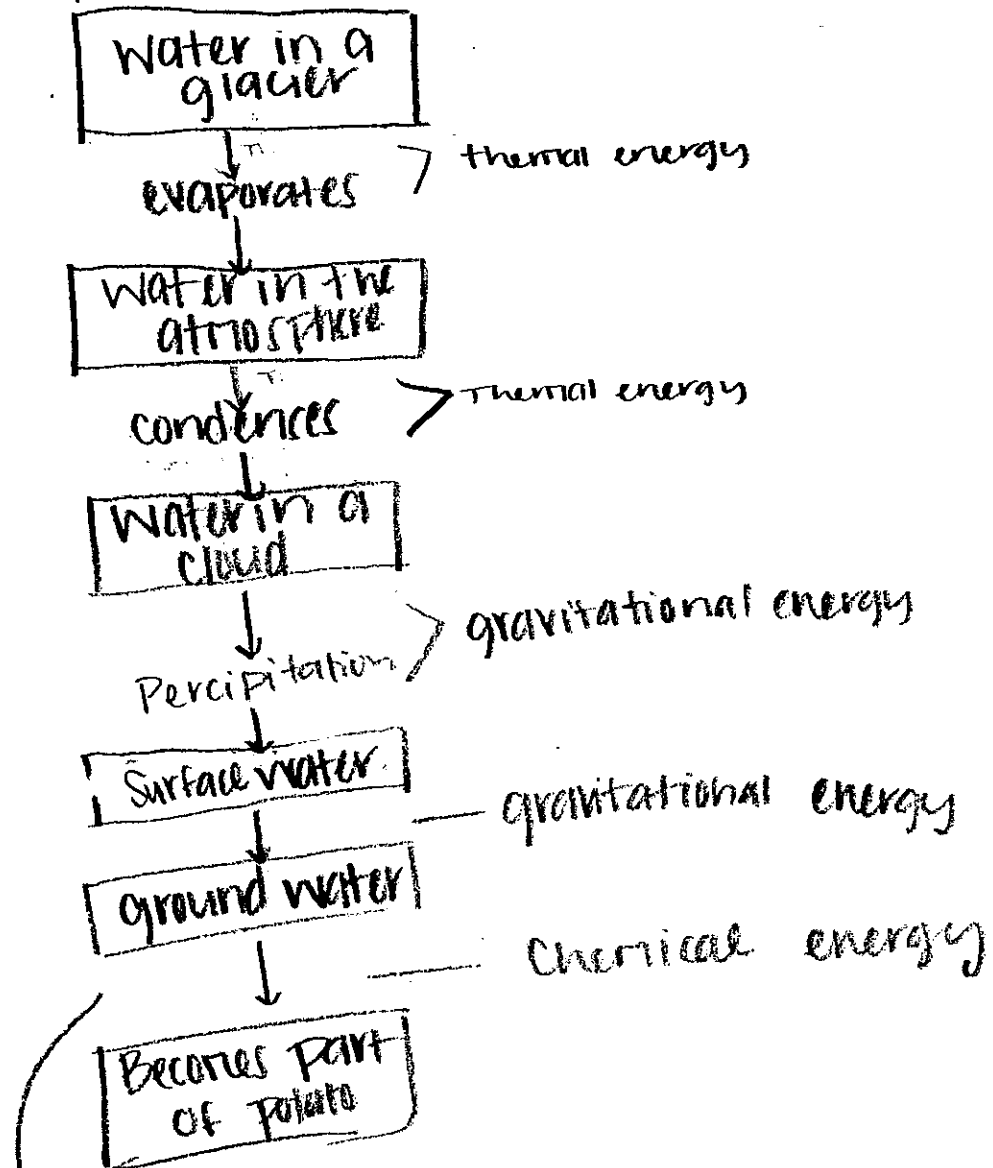
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

3

SHORT ANSWER. 25 points each (50 points total)

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- Water phase at each step in the journey
- A name for each process that moves or transforms water



The roots of the potato plant absorb the ground water and make use of that water in the process of making food for the potato plant through chemical energy. The potato plant will also release the water into the atmosphere through evaporation and contribute to the water cycle.

A 41944159

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

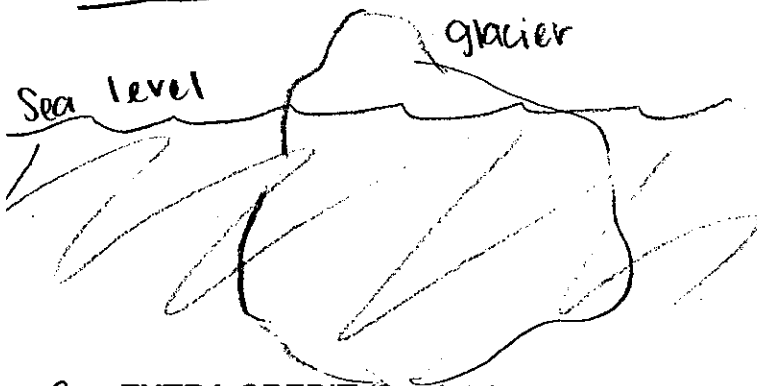
- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

If glaciers had a higher salt content than the surrounding seawater a great deal would change.

First of all, the density of the ocean and glacier would change, causing the buoyancy of the glacier within the ocean to change, thereby exposing different parts of the glacier. A higher salt content within the glacier would cause it to be more buoyant than the current, less salty glaciers (like how you feel more buoyant when swimming in the ocean compared to a lake) and therefore, it will sit higher in the water. This added buoyancy will cause a drop in the sea levels, because they require less resistance to keep them afloat.

Current Seawater & glaciers

lower salt seawater / higher salt glaciers



2

EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- ☒ They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

40 24

YOUR SCORE:

64

STUDENT ID #: A431451612; GROUP #: 16

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 10
a. Water molecules become larger
☒ b. Gaseous water becomes liquid water
~~c. Hydrogen and oxygen atoms combine to form liquid water~~
d. The temperature of water molecules decreases
- B
2. Which of the following is the largest freshwater reservoir
a. The atmosphere
b. ~~Oceans~~
☒ c. Glaciers
d. ~~Lakes and streams~~
- C
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
~~a. Rainfall and surface runoff into the lake~~
~~b. Seasonal high water from the Mississippi River~~
☒ c. Ground water from beneath the surface
- C
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
a. ~~A = evaporation, B = deposition, C = sublimation~~
☒ b. A = condensation, B = precipitation, C = evaporation
~~c. A = sublimation, B = precipitation, C = evaporation~~
~~d. A = precipitation, B = freezing, C = condensation~~
- B
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
a. Liquid water from the pot condenses
b. Liquid water from the pot evaporates
☒ c. Water vapor from the pot condenses
~~d. Water vapor from the pot evaporates~~
- C
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
☒ a. This is what one would predict with global warming
b. This is the opposite of what one would predict with global warming
~~c. Predictions about global warming do not address global precipitation.~~
- A

A4345662

ISP 203A: GLOBAL CHANGE

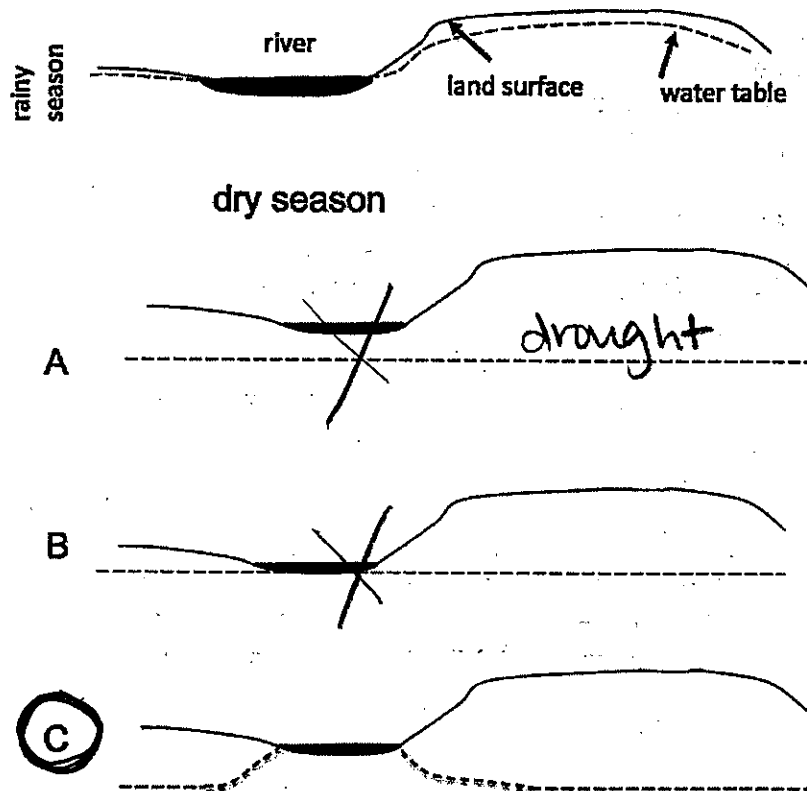
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

2

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. ~~A=chemical, B=thermal, C=thermal~~
 b. A = gravitational, B= gravitational, C= thermal
 c. A = gravitational, B= thermal, C= thermal
 d. ~~A=thermal, B=thermal, C=thermal~~

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:

- a. been greater
 b. been less
 c. remained the same

10. What happens when plants respire?

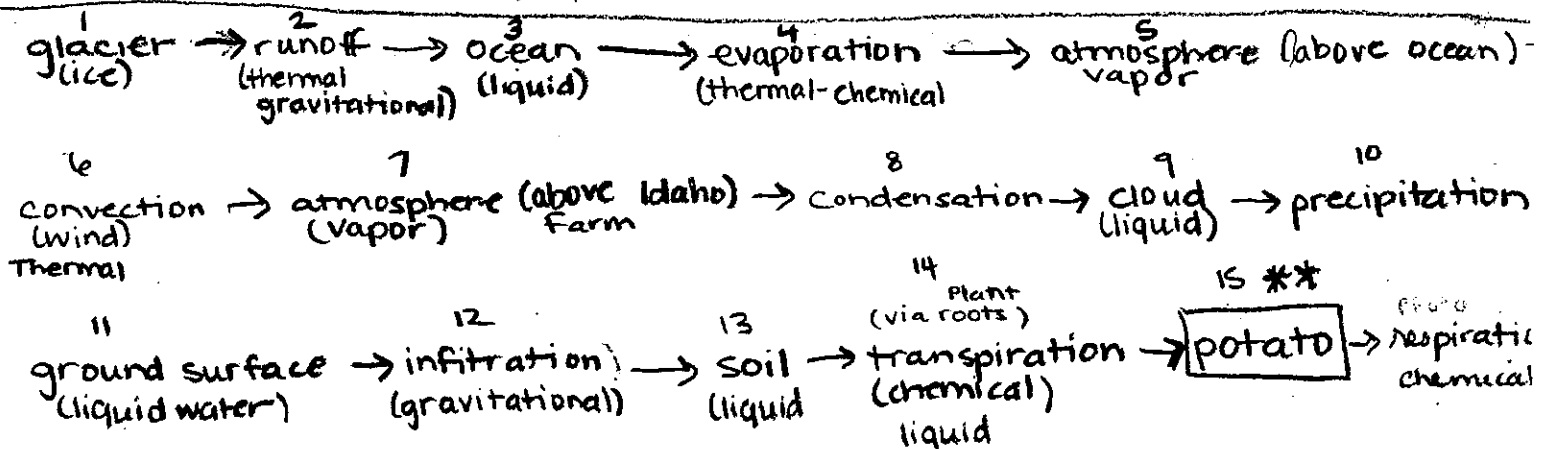
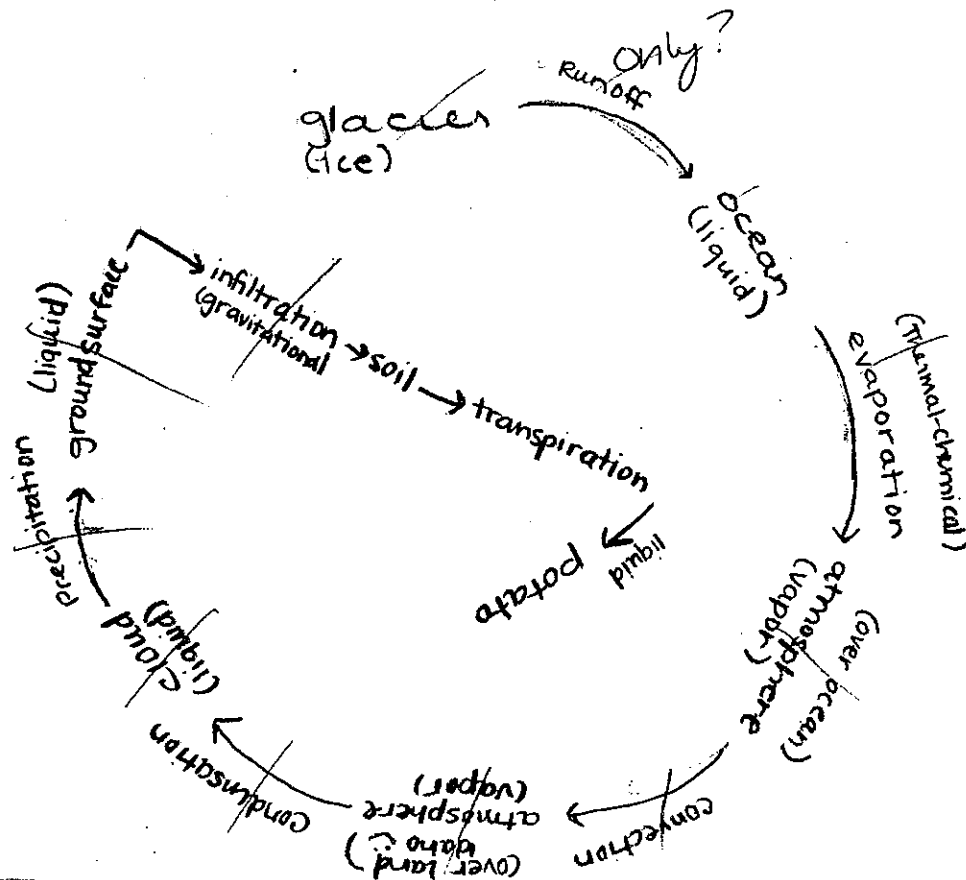
- a. ~~Plants convert biomass into energy~~
 b. ~~Plants convert energy into biomass~~
 c. Plants release energy

443145662

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water



2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- a. Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - b. The energy that is causing movement or transformation of water.

(deep)

Circulation in oceans happens because cold salty water is denser than warm surface water. Water warms at the equator flows toward the poles where it cools and sink creating a conveyor belt of ocean mixing. Both difference in density (caused by heat and salinity) as well as atmospheric influences (wind) cause this function to operate. If polar ice contained more salt than surrounding seawater the density of the remaining sea water may not be enough to sink to the depths necessary to maintain thermohaline circulation. Due to evaporation, water reaching the poles sinks as a result of both increased salinity left over from evaporation as well as cooling. If the salt freezes in the ice the waters density would decrease. I am not positive to what degree it would be interrupt circulation, but seems a though it would certainly cause a disturbance

25

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- a. They both destroy matter during energy conversion
- b. ~~They both convert thermal energy into gravitational energy~~
- c. They both convert chemical energy into thermal energy
- d. ~~They both convert kinetic energy into potential energy~~

50 49

YOUR SCORE:

99 ! 3

STUDENT ID #: AU0974799; GROUP #: 16

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 8
 - a. Water molecules become larger
 - ☒ b. Gaseous water becomes liquid water
 - c. Hydrogen and oxygen atoms combine to form liquid water
 - d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
 - ☒ a. The atmosphere
 - ☒ b. Oceans
 - ☒ c. Glaciers
 - d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
 - a. Rainfall and surface runoff into the lake
 - ☒ b. Seasonal high water from the Mississippi River
 - ☒ c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
 - ☒ a. A= evaporation, B= deposition, C= sublimation
 - ☒ b. A = condensation, B= precipitation, C= evaporation
 - c. A= sublimation, B= precipitation, C= evaporation
 - ☒ d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
 - a. Liquid water from the pot condenses *gas to liquid*
 - ☒ b. Liquid water from the pot evaporates *liquid to gas*
 - c. Water vapor from the pot condenses
 - d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
 - ☒ a. This is what one would predict with global warming
 - b. This is the opposite of what one would predict with global warming
 - c. Predictions about global warming do not address global precipitation.

A40974799

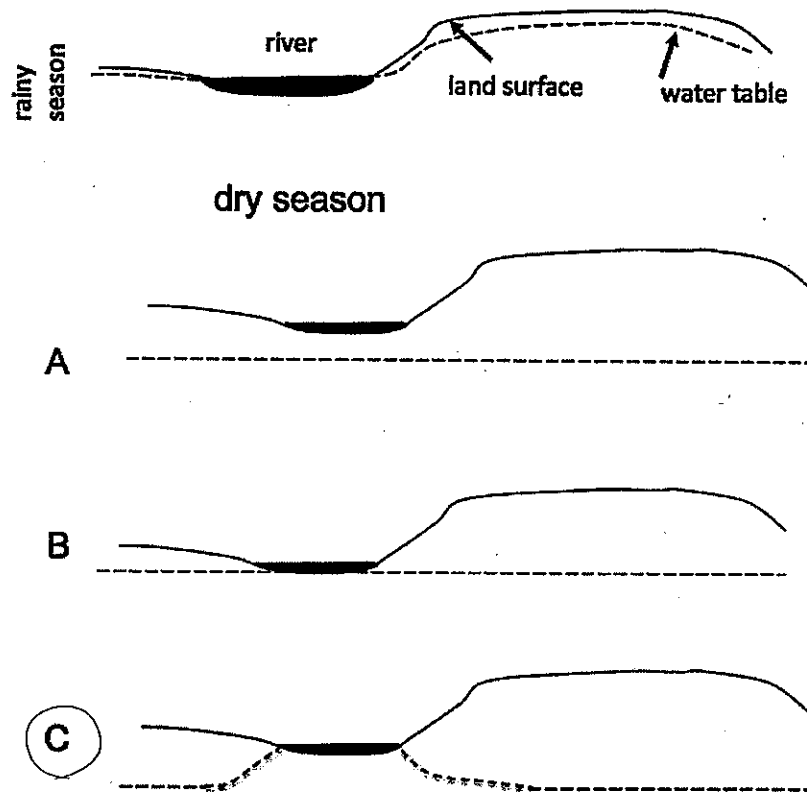
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

2

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- ~~a.~~ A= chemical, B= thermal, C= thermal
b. A = gravitational, B= gravitational, C= thermal
☒ c. A = gravitational, B= thermal, C= thermal
~~d.~~ A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?

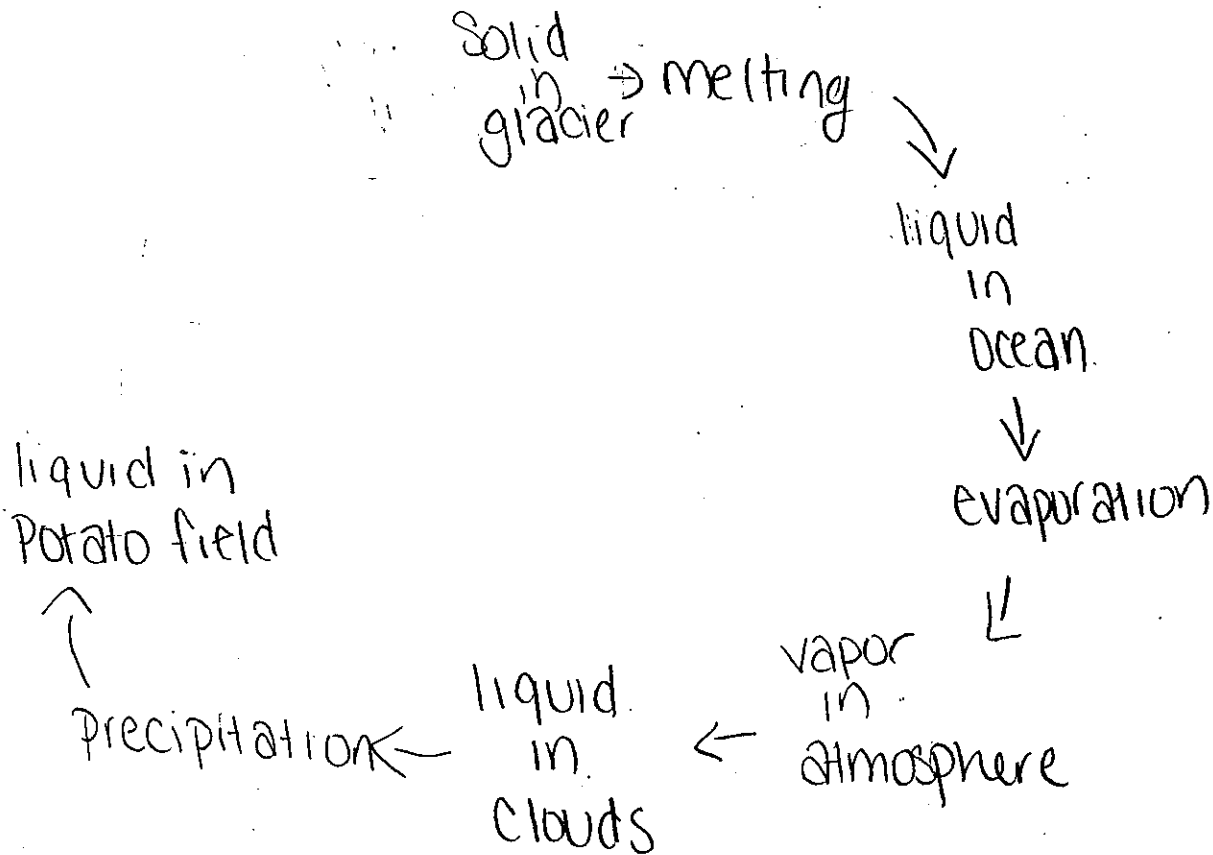


9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0 g/cc . If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
b. been less
c. remained the same
- Water
Ice
10. What happens when plants respire?
- ☒ a. Plants convert biomass into energy
~~b.~~ Plants convert energy into biomass
c. Plants release energy

A46974799

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- Water phase at each step in the journey
 - A name for each process that moves or transforms water



25

A40974779

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

4

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- a. Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - b. The energy that is causing movement or transformation of water.

10

If Polar ice contained more salt than the surrounding seawater from which it freezes, it would be more dense than seawater and sink. Then the seawater would rise to the top because it contains less salt than the ice. The seawater moves ^(thermohaline circulation) to the poles to cool down and freezes. Then the ice sinks to the bottom and the ice that was on the bottom rises to the top and melts or evaporates. Then the seawater moves to the poles to cool down and repeat the same steps.

how?

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- a. They both destroy matter during energy conversion
- b. They both convert thermal energy into gravitational energy
- ☒ c. They both convert chemical energy into thermal energy
- d. They both convert kinetic energy into potential energy.

40 37

YOUR SCORE:

77

STUDENT ID #: A37497963; GROUP #: 16

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 8
 - a. Water molecules become larger
 - ☒ b. Gaseous water becomes liquid water
 - c. Hydrogen and oxygen atoms combine to form liquid water
 - d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
 - a. The atmosphere
 - b. Oceans
 - ☒ c. Glaciers
 - d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
 - ☒ a. Rainfall and surface runoff into the lake
 - b. Seasonal high water from the Mississippi River
 - c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of ____A____, then becomes water in a glacier through the process of ____B____, and then becomes water in clouds through the process of ____C____.
 - a. A= evaporation, B= deposition, C= sublimation
 - ☒ b. A = condensation, B= precipitation, C= evaporation
 - c. A= sublimation, B= precipitation, C= evaporation
 - d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
 - a. Liquid water from the pot condenses
 - ☒ b. Liquid water from the pot evaporates
 - c. Water vapor from the pot condenses
 - d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
 - a. This is what one would predict with global warming
 - b. This is the opposite of what one would predict with global warming
 - c. Predictions about global warming do not address global precipitation.

A37497963

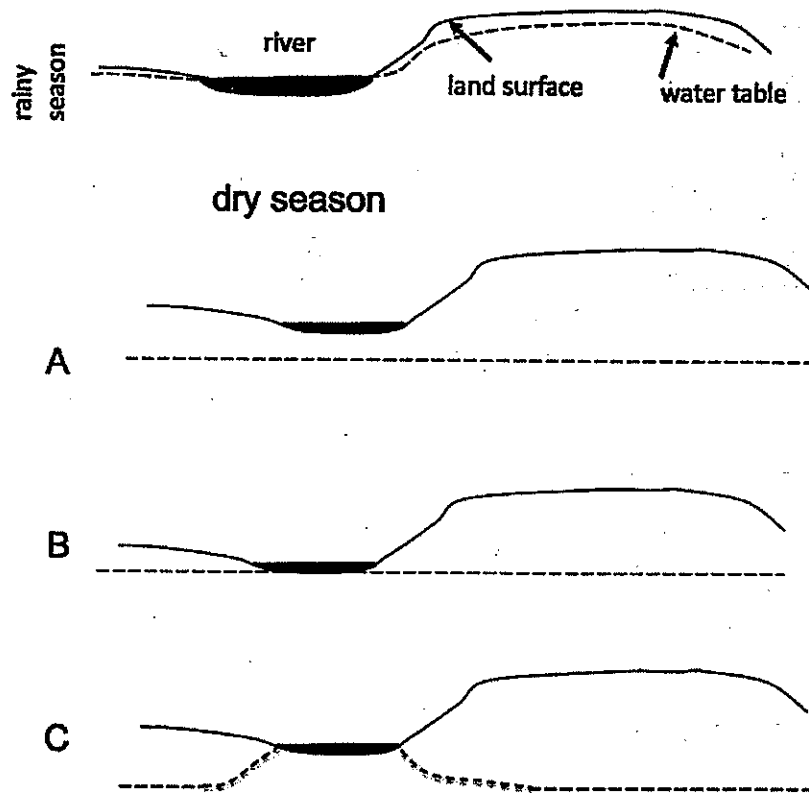
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

2

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



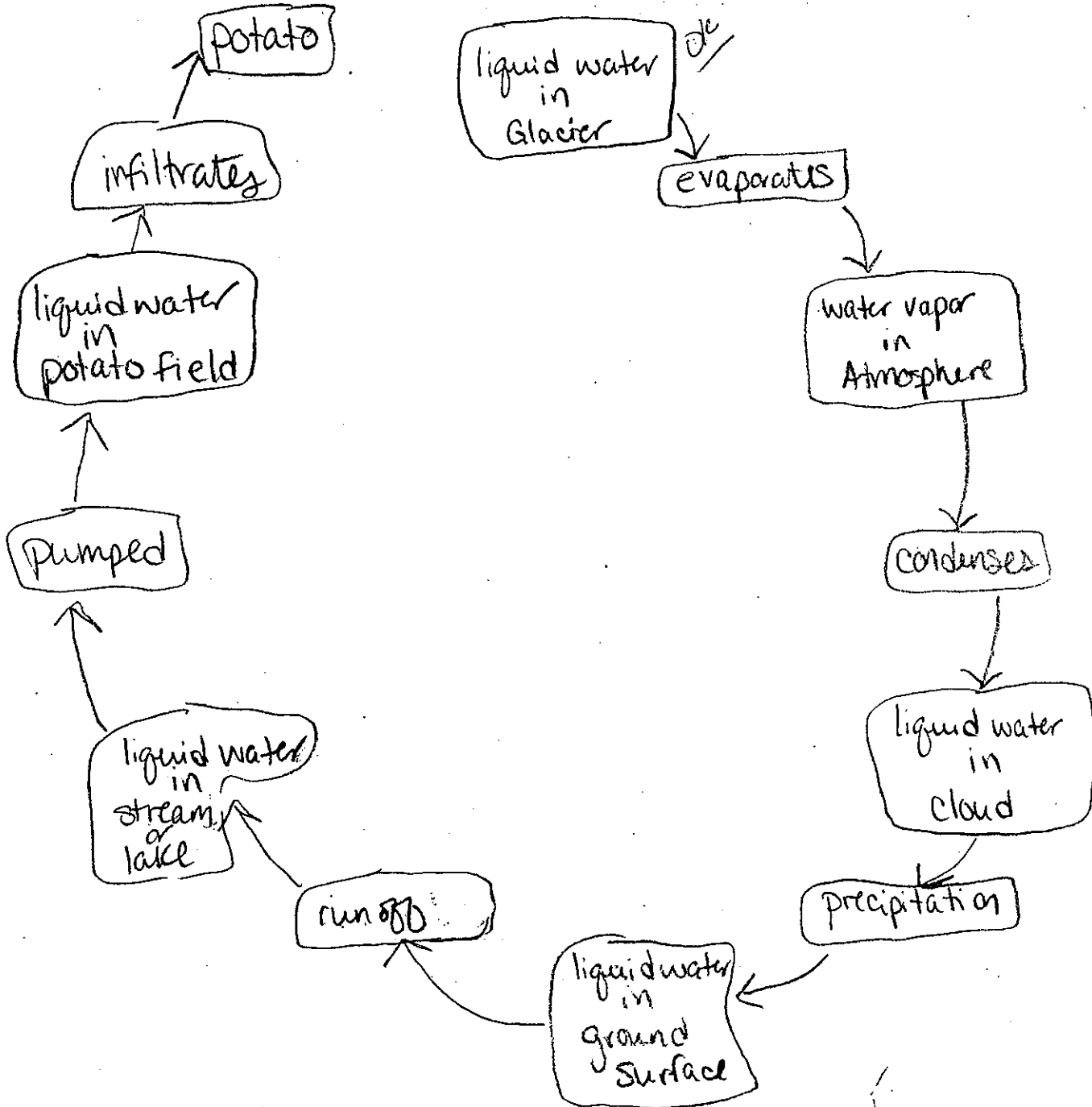
9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

A 37497963

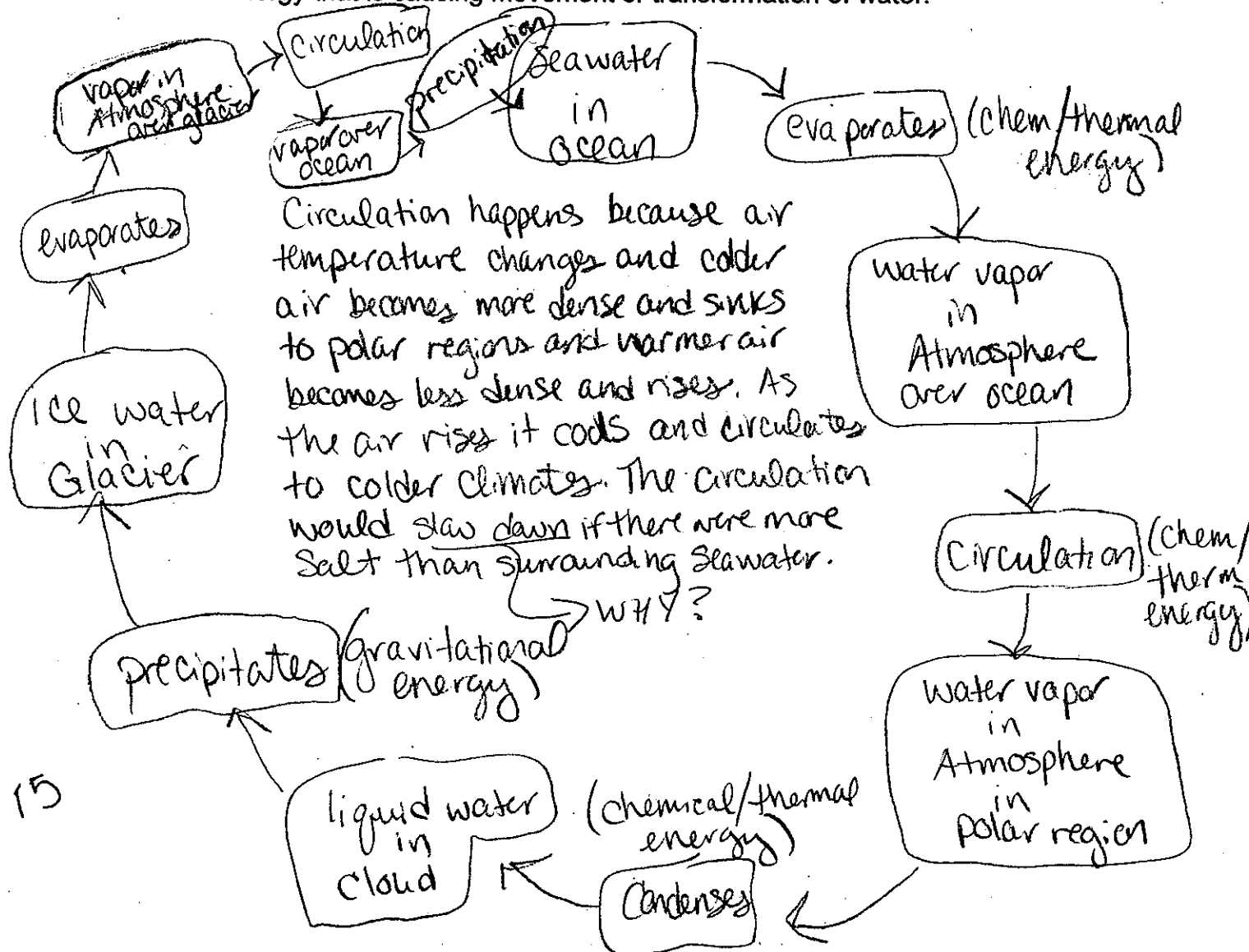
SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water



2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
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 - The energy that is causing movement or transformation of water.



EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

40 40

YOUR SCORE:

80

STUDENT ID #: A42503261; GROUP #: 17

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

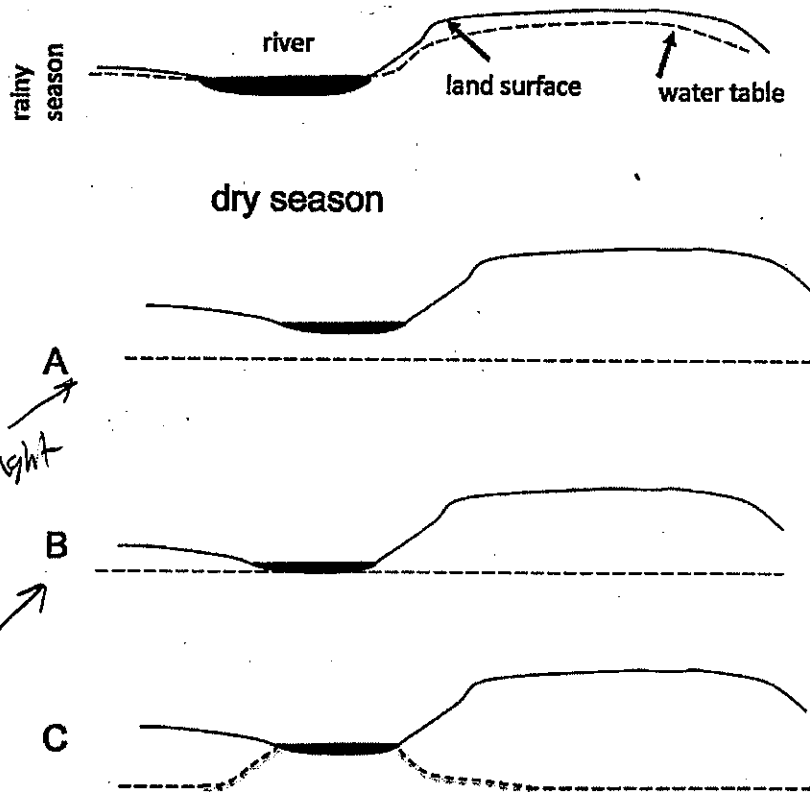
1. What happens when water molecules condense?
a. Water molecules become larger
b. Gaseous water becomes liquid water
c. Hydrogen and oxygen atoms combine to form liquid water
d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
a. The atmosphere
b. Oceans
c. Glaciers
d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
a. Rainfall and surface runoff into the lake
b. Seasonal high water from the Mississippi River
c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
a. A= evaporation, B= deposition, C= sublimation
b. A = condensation, B= precipitation, C= evaporation
c. A= sublimation, B= precipitation, C= evaporation
d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
a. Liquid water from the pot condenses
b. Liquid water from the pot evaporates
c. Water vapor from the pot condenses
d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
a. This is what one would predict with global warming
b. This is the opposite of what one would predict with global warming
c. Predictions about global warming do not address global precipitation.

AR 503261

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A = chemical, B = thermal, C = thermal
- b. A = gravitational, B = gravitational, C = thermal
- c. A = gravitational, B = thermal, C = thermal
- d. A = thermal, B = thermal, C = thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water

- a. Step 1: A. Glacier Located in Northwest Canada melts due to a heat wave from the Pacific ocean
 Step 2: Water from melted glacier evaporates into the atmosphere
 Step 3: The storm unit from the evaporated water travels southeast hitting most of Canada, the midwest, and eventually finished at Lake Erie. MISSING STEPS
 Step 4: Water is pumped from Lake Erie and used by potato farmer
 Step 5: Potato farmer waters his potato plants.
 Step 6: Water seeps through the ground through a gravitational pull and is absorbed by the potato plant.

- b. Step 1: Thermal Energy causing glacier runoff
 Step 2: Thermal Energy causing evaporation
 Step 3: Condensation has occurred and the storm is moving
 Gravitational pull causes precipitation
 Step 4: no major change
 Step 5: no major change
 Step 6: Gravitational energy forces water into the ground for the plant.

A 42563261

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

4

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
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ans. The density of ice would increase because of the increase in salt composition thus would cause the water table to rise and the water cycle to increase. The reason is the water is less dense than the ice causing it to rise. The rise in water would bring it closer to sunlight causing more evaporation and an increase in the water cycle rate. This would also cause an increase in temperature because thermal energy drives the water cycle.

2

EXTRA CREDIT (2 points)

- EC. How are burning wood and respiration similar?
- a. They both destroy matter during energy conversion
 - b. They both convert thermal energy into gravitational energy
 - c. They both convert chemical energy into thermal energy
 - d. They both convert kinetic energy into potential energy.

20 17

YOUR SCORE:

37

See me

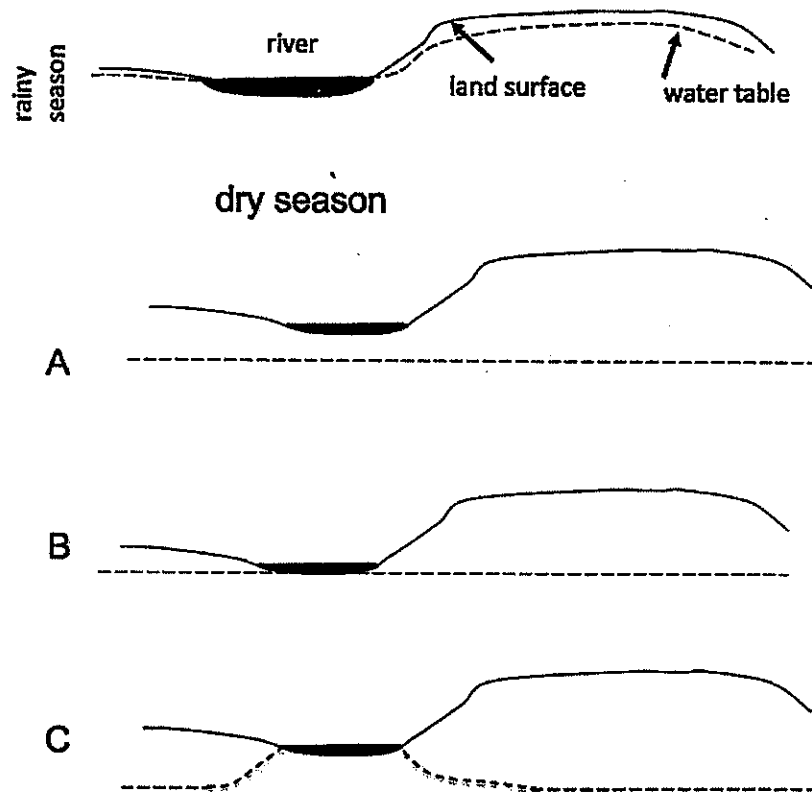
STUDENT ID #: A41727610; GROUP #: 17**MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.**

1. What happens when water molecules condense? 7
 - ☒ a. Water molecules become larger
 - ☐ b. Gaseous water becomes liquid water
 - ☐ c. Hydrogen and oxygen atoms combine to form liquid water
 - ☐ d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
 - ☐ a. The atmosphere
 - ☐ b. Oceans
 - ☐ c. Glaciers
 - ☐ d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
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 - ☐ b. Seasonal high water from the Mississippi River
 - ☐ c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
 - ☒ a. A= evaporation, B= deposition, C= sublimation
 - ☐ b. A = condensation, B= precipitation, C= evaporation
 - ☐ c. A= sublimation, B= precipitation, C= evaporation
 - ☒ d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
 - ☐ a. Liquid water from the pot condenses
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 - ☐ c. Water vapor from the pot condenses
 - ☐ d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
 - ☐ a. This is what one would predict with global warming
 - ☐ b. This is the opposite of what one would predict with global warming
 - ☐ c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- ☒ a. A = chemical, B = thermal, C = thermal
☐ b. A = gravitational, B = gravitational, C = thermal
☐ c. A = gravitational, B = thermal, C = thermal
☒ d. A = thermal, B = thermal, C = thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?

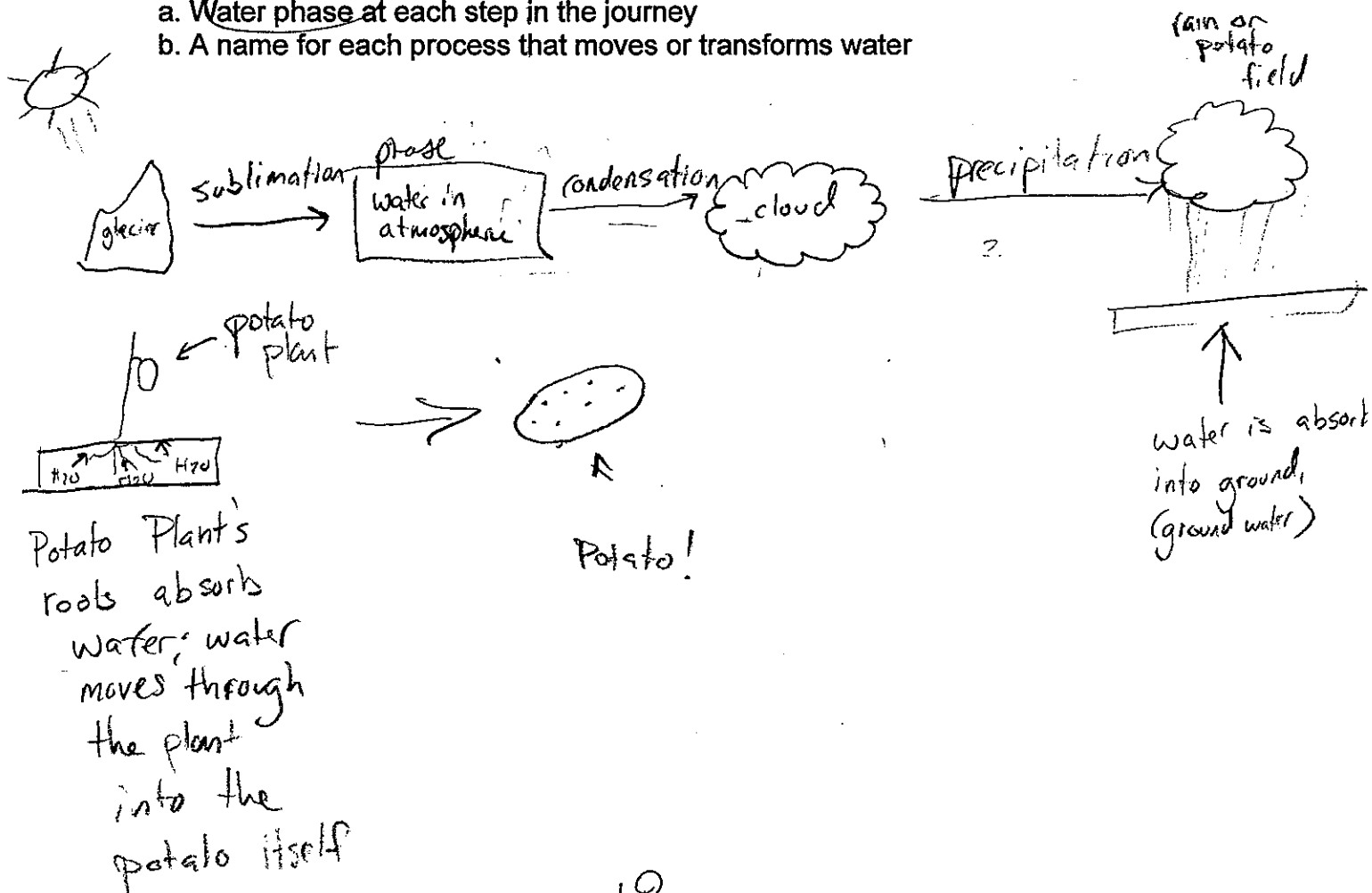


9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
☐ a. been greater
☐ b. been less
☐ c. remained the same
10. What happens when plants respire?
☐ a. Plants convert biomass into energy
☐ b. Plants convert energy into biomass
☐ c. Plants release energy

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water



2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

Circulation happens due to the density and temperature of water. The salinity (salt level) of water affects the density of water. When the water is heated, cold water sinks to the bottom and the warm water moves with the currents. ^{why?} If polar ice had more salt than sea water, then as it melts the ocean would be filled with more salt. Also, the now more dense freshly melted salt water would sink to the bottom, because it has more salt in it than the rest of the seawater.

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

35 30

YOUR SCORE:

65

STUDENT ID #: A43030607; GROUP #: 18

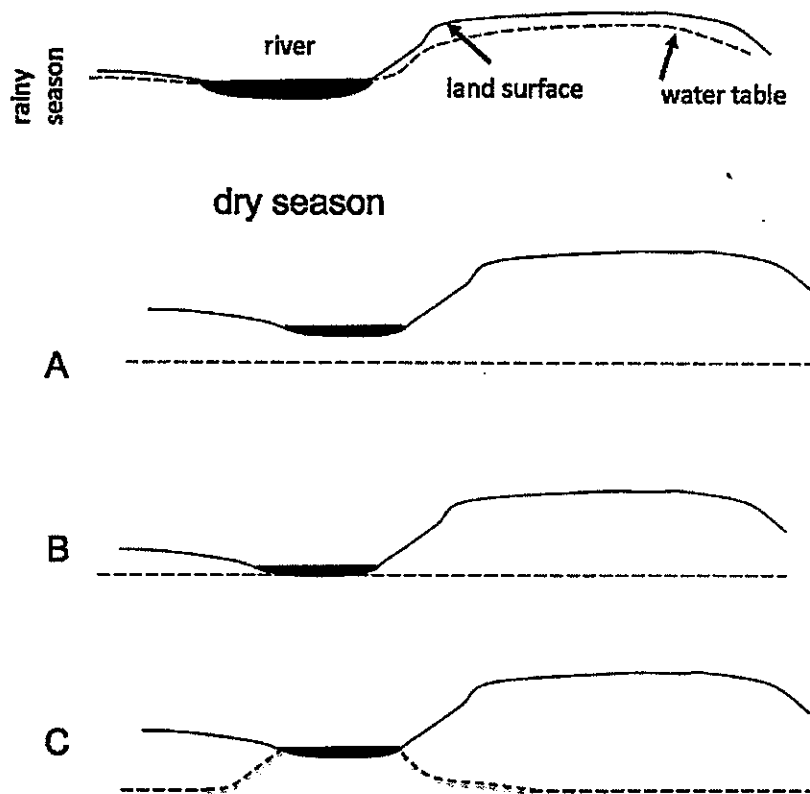
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 8
 - a. Water molecules become larger
 - b. Gaseous water becomes liquid water
 - ☒ c. Hydrogen and oxygen atoms combine to form liquid water
 - d. The temperature of water molecules decreases
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 - ☒ c. Glaciers
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 - ☒ a. Rainfall and surface runoff into the lake
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4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of ____A____, then becomes water in a glacier through the process of ____B____, and then becomes water in clouds through the process of ____C____.
 - a. A= evaporation, B= deposition, C= sublimation
 - b. A = condensation, B= precipitation, C= evaporation
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 - ☒ a. This is what one would predict with global warming
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7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- c. A = gravitational, B= thermal, C= thermal
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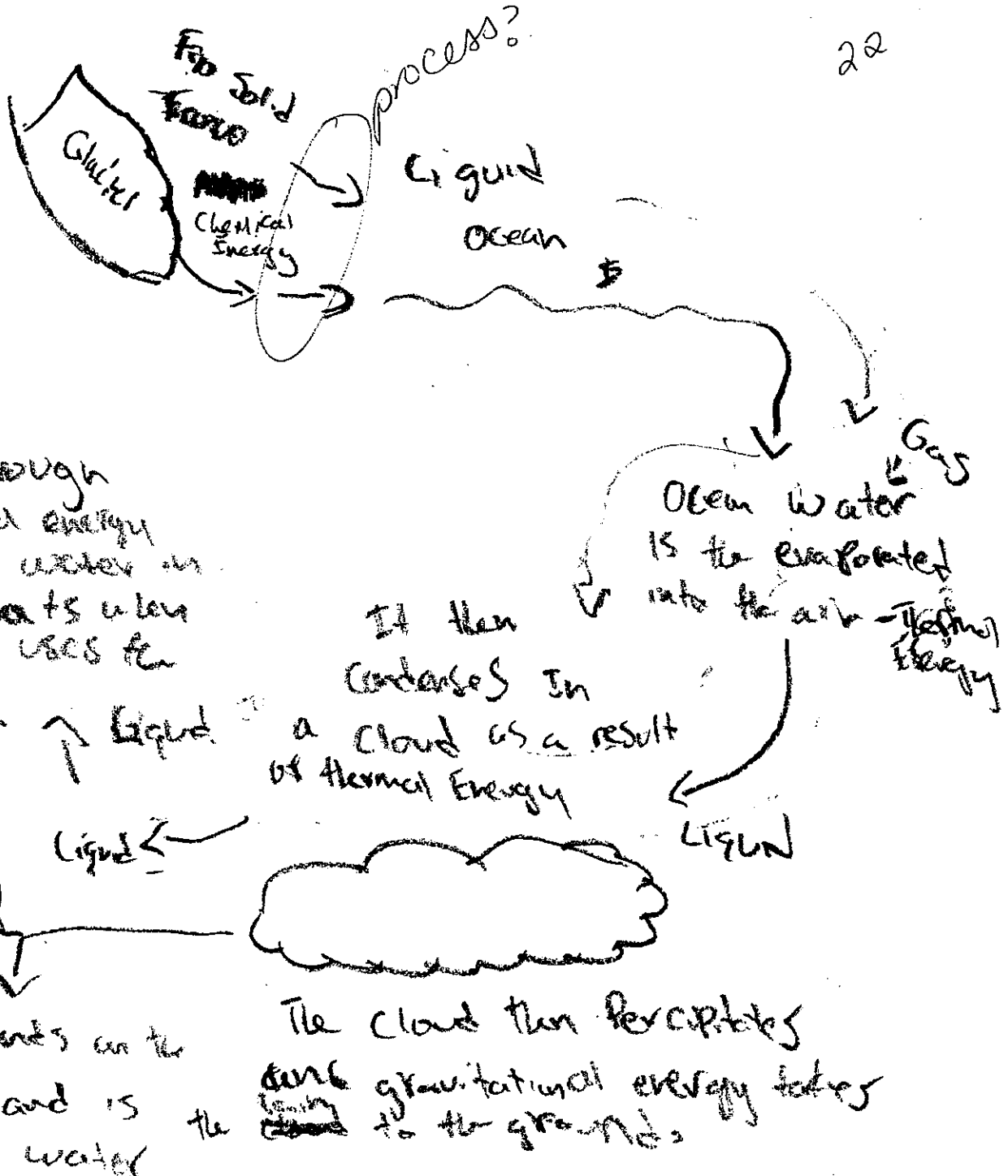
8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
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~~Surrounding~~ Surrounding sea-water has more ~~it~~ is more dense, ~~more~~ because there is more salt in it. The ~~dense~~ density is not only from the salt but from other particles that are in the water. This is also why it doesn't freeze, ~~the water~~. The polar ice is frozen because it is the top of the water the part that is the least dense, contains the least amount of salt and the least amount of other particles. For the thermohaline circulation to change salt and other particles in the water would have to be evenly distributed through out the depths, and if that were the case I doubt any part of the water would freeze because the parts that do have ~~the~~ some but very small amounts of salt and whatever else is in the water.

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

40 29

YOUR SCORE:

69

STUDENT ID #: A41417295; GROUP #: 18

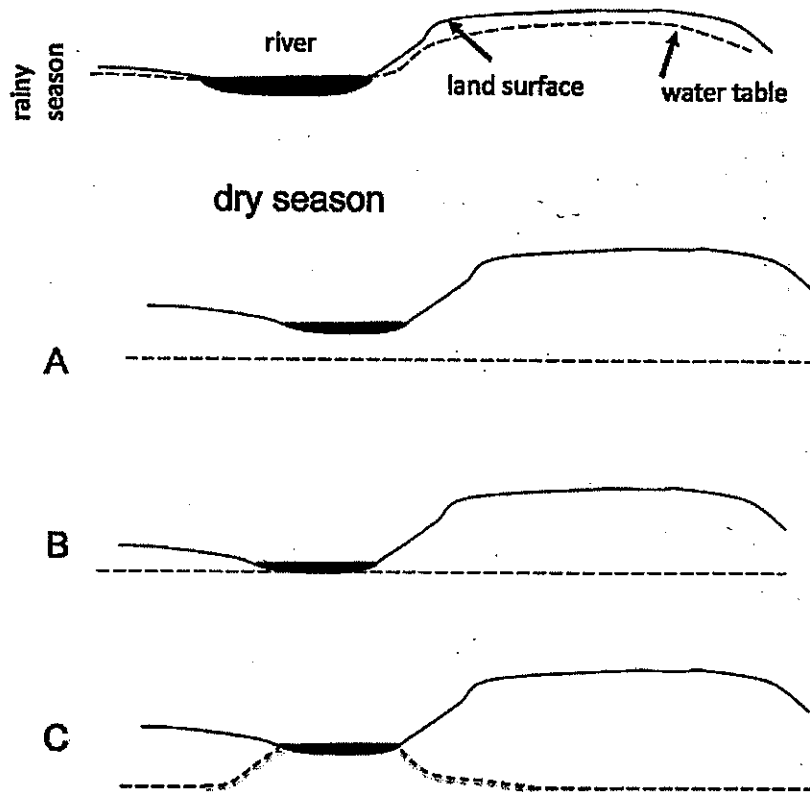
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 9
 - a. Water molecules become larger
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 - c. Hydrogen and oxygen atoms combine to form liquid water
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2. Which of the following is the largest freshwater reservoir
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 - c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A , then becomes water in a glacier through the process of B , and then becomes water in clouds through the process of C .
 - a. A= evaporation, B= deposition, C= sublimation
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7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

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b. A = gravitational, B = gravitational, C = thermal
c. A = gravitational, B = thermal, C = thermal
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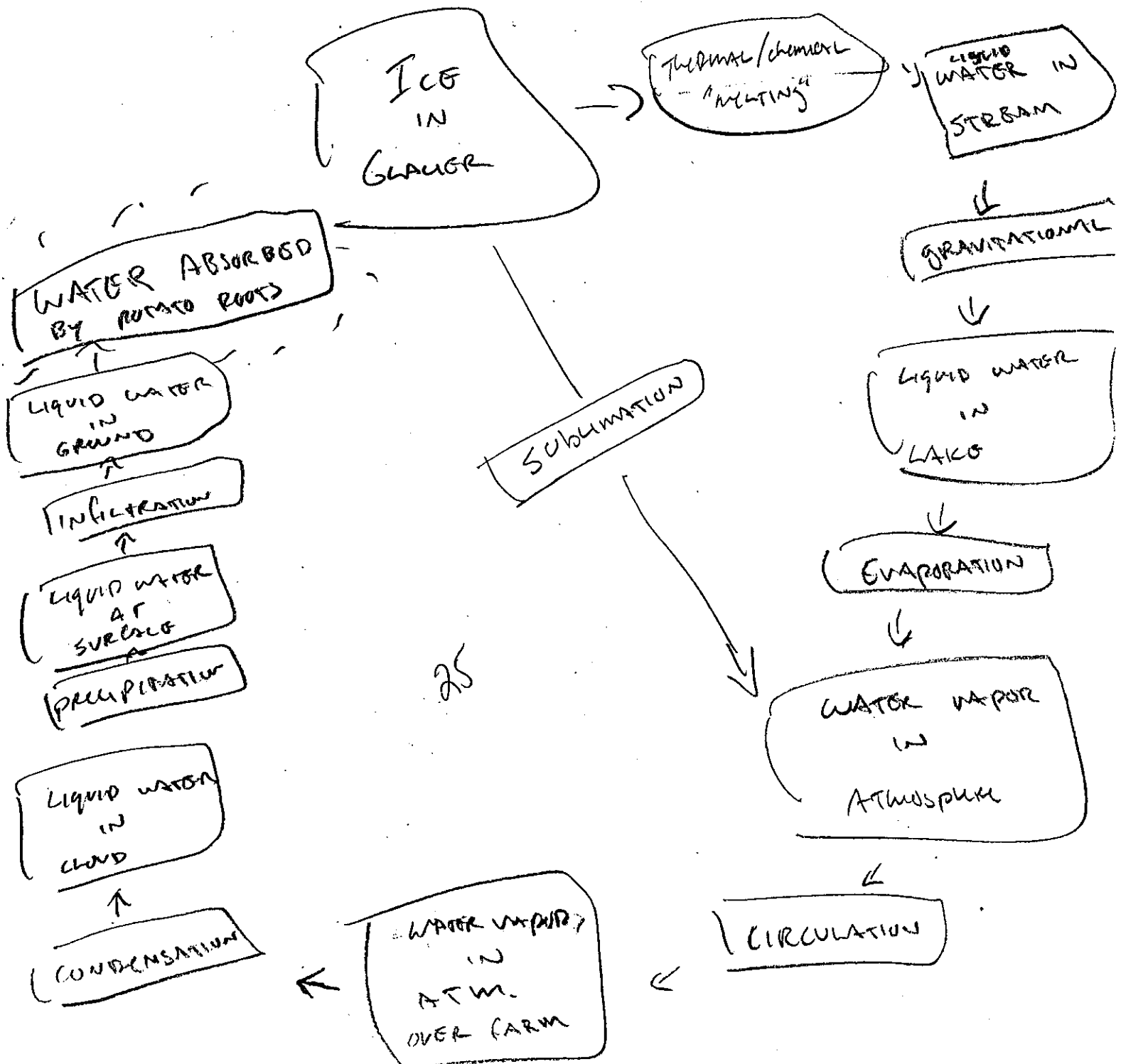
8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
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 - Plants convert energy into biomass
 - Plants release energy

SHORT ANSWER. 25 points each (50 points total)

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CIRCULATION IS CAUSED BY DIFFERENT DENSITIES OF WATER. WATER DENSITY CHANGES BY TEMP. & SALINITY CONTENT. COOLER WATER IS MORE DENSE THAN WARMER WATER, & WATER W/ MORE SALT IS MORE DENSE THAN WATER W/ LESS SALT.

IF ICE AT THE POLES ABSORBED SALT FROM THE SURROUNDING WATER, IT WOULD REDUCE THE DENSITY OF THAT WATER. BECAUSE THAT WATER IS COOLER THAN WATER IN THE EQUATORIAL REGION THERE WOULD STILL BE CIRCULATION, BUT IT WOULD BE SLOWER BECAUSE THE DIFFERENCE IN DENSITY BTW! THE PREVIOUSLY SALTY COLD WATER VS. THE NOW JUST COLD WATER IS LESS WHEN COMPARED TO THE WARM WATER.

1 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

45 37

YOUR SCORE:

82

STUDENT ID #: A42257459; GROUP #: 19

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

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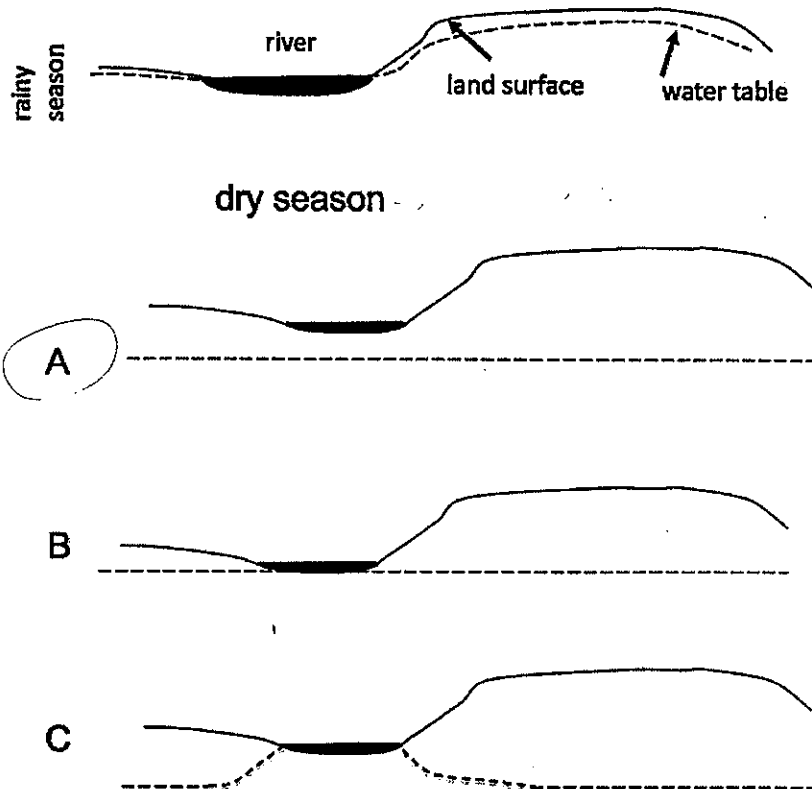
A422 57427

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
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c. A = gravitational, B= thermal, C= thermal
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LACK-OF?

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



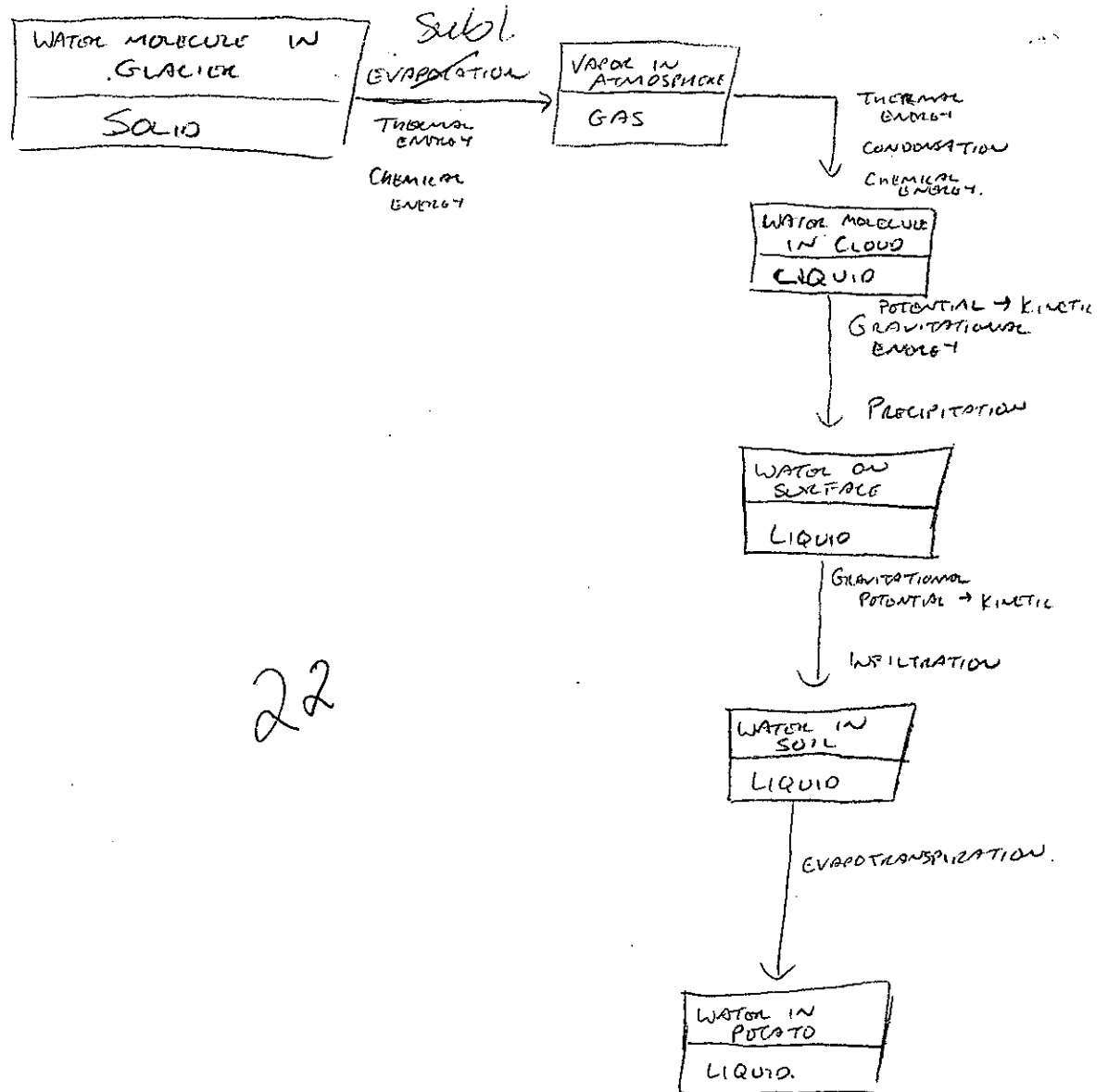
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- a. Plants convert biomass into energy
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A42257459

SHORT ANSWER. 25 points each (50 points total)

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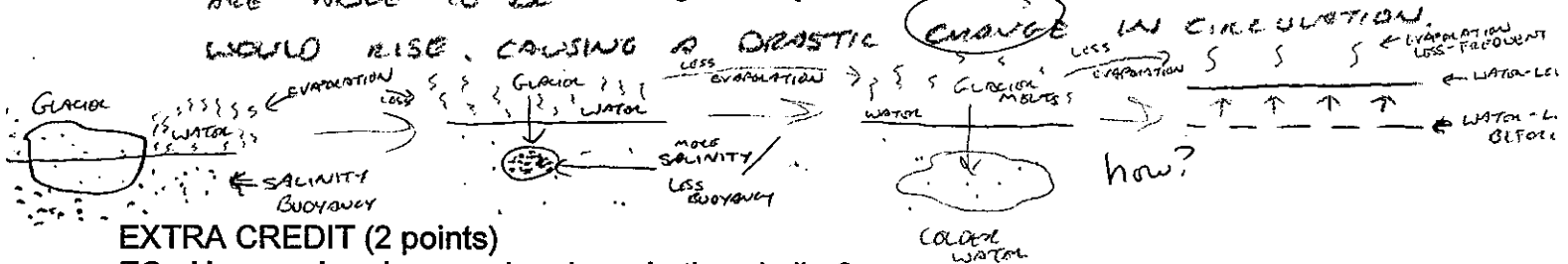


A42257459

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

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If ice were to contain more salt than the surrounding seawater from which it freezes, this would change thermohaline circulation in oceans in that the ice would not be more buoyant than the surrounding seawater. This would mean that the ice would sink instead of float on the ocean surface. Because of the sinking of the glacier, the bottom of the ocean would become much cooler than the water on the ocean surface. The lack of buoyancy + salinity within the seawater would not be able to support the weight of the glacier if the surrounding seawater were less saline than the glacier. By the ocean floor cooling even more than normal, it would cause the ocean temperatures to drop across the world, which would possibly decrease evaporation due to a lack of the necessary amount of thermal energy provided by the sun. This would result in less rainfall + the ocean levels to rise + may also lead to a new ice age. Because the glaciers in our current system do not contain more salt than the surrounding sea-water, they are less dense + because of the salinity + buoyancy of the oceans, the glaciers are able to be "held-up". Should the glaciers sink, oceans would rise, causing a drastic change in circulation.



EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

30 34
YOUR SCORE:

64

STUDENT ID #: 40749278; GROUP #: 19

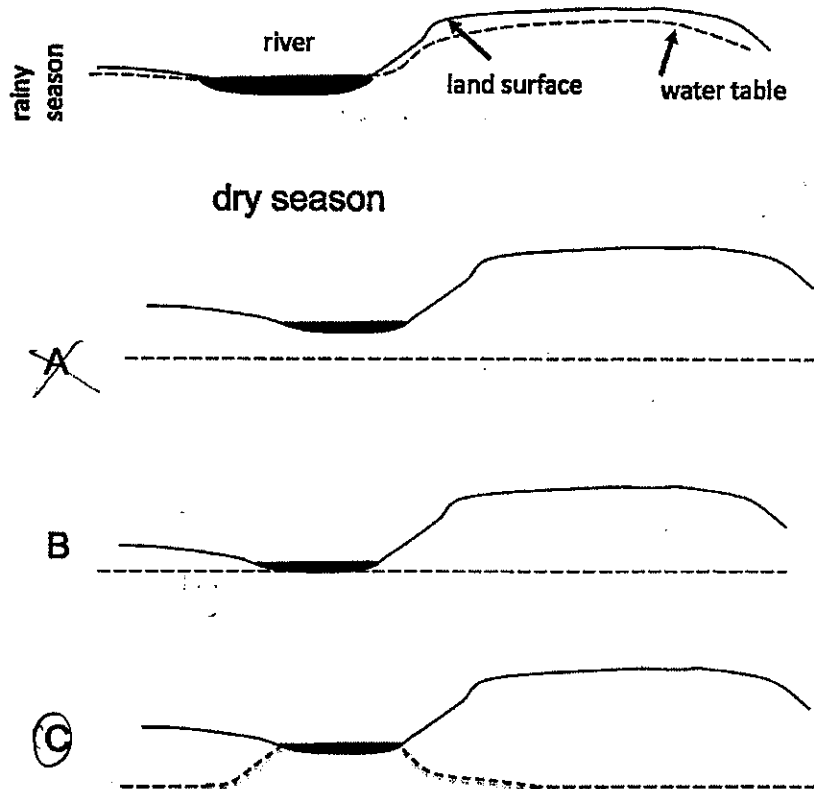
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

- 7
1. What happens when water molecules condense?
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 - ☒ b. Gaseous water becomes liquid water
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 - d. The temperature of water molecules decreases
 2. Which of the following is the largest freshwater reservoir
 - a. The atmosphere
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 4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A cond., then becomes water in a glacier through the process of B precip and then becomes water in clouds through the process of C evapor.
 - a. A= evaporation, B= deposition, C= sublimation
 - ☒ b. A = condensation, B= precipitation, C= evaporation
 - c. A= sublimation, B= precipitation, C= evaporation
 - d. A = precipitation, B= freezing, C= condensation
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7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A grav. energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

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b. A = gravitational, B= gravitational, C= thermal
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d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



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10. What happens when plants respire?
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c. Plants release energy

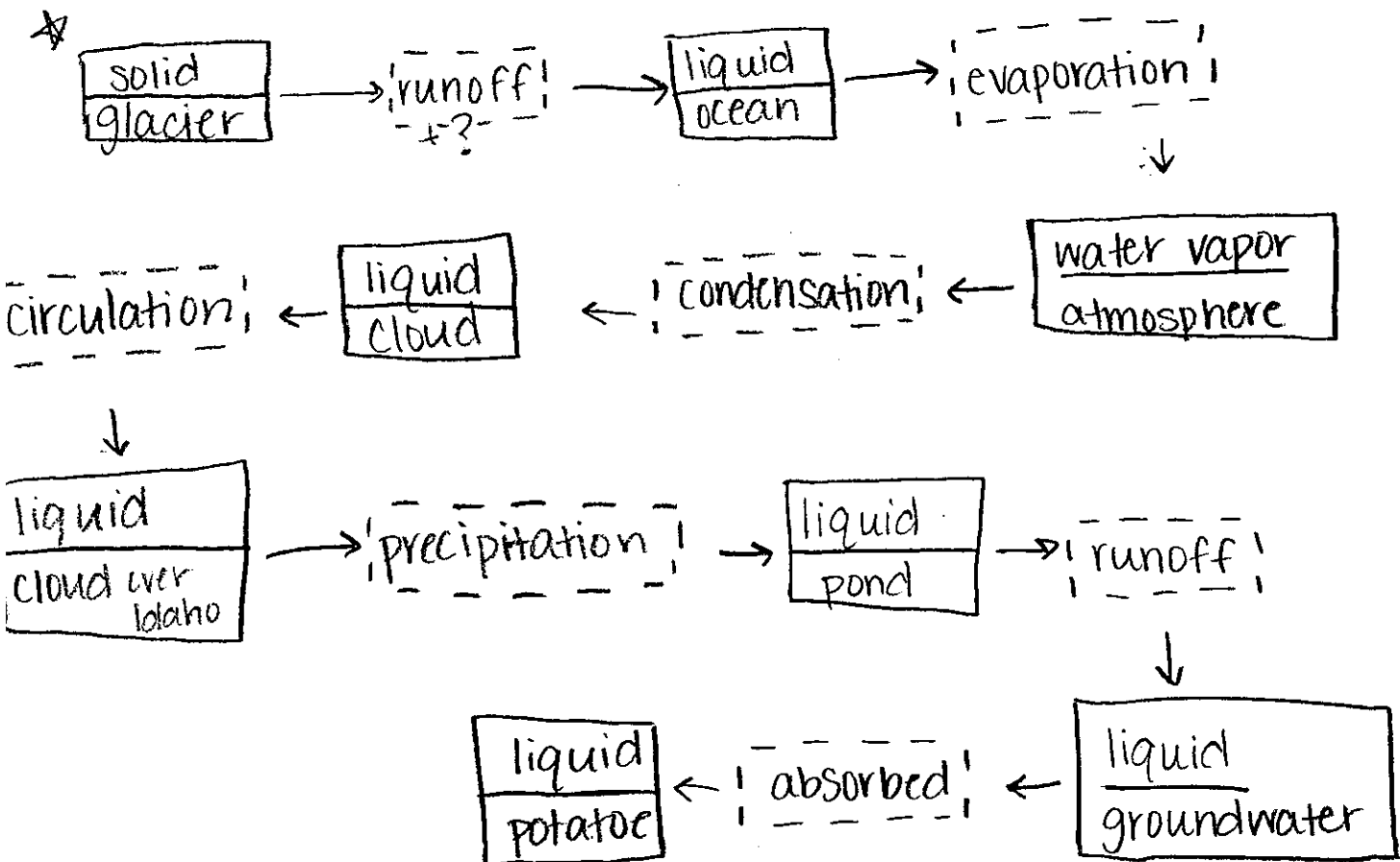
SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water

glacier → potatoe

glacier → ocean → cloud → cloud over Idaho → precip → groundwater

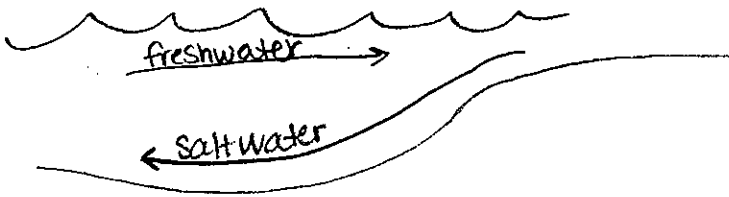


2. When ice forms from seawater, the ice contains less salt than the remaining water.

Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

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salt water is more dense than freshwater so the less salty water remains closer to the top. Since it is closer to the surface, the more likely it is to freeze, therefore freezing the least salty part.



The water circulates because of the currents that are going on in the water. The movement is a gravitational change of movement between the two types of water. If water was saltier, it would be more difficult to freeze than if it were freshwater without the density of salt.

5

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- ☒ They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

35 30

YOUR SCORE:

65

STUDENT ID #: A40272800; GROUP #: 19

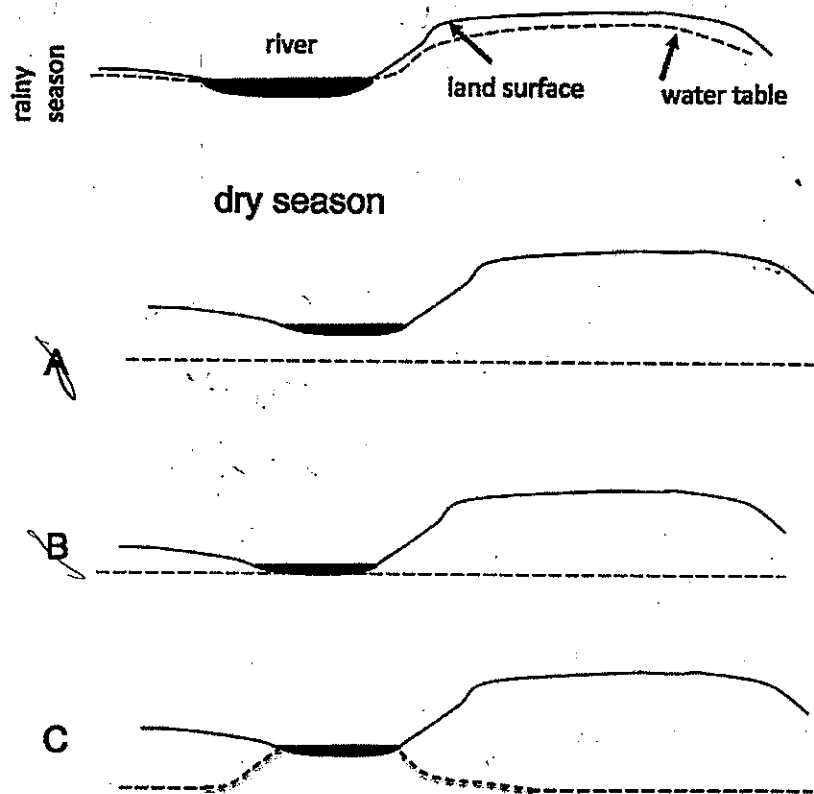
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? *energy release* 8
 - ~~a.~~ Water molecules become larger
 - b. Gaseous water becomes liquid water
 - ~~c.~~ Hydrogen and oxygen atoms combine to form liquid water
 - ~~d.~~ The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
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4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of con A, then becomes water in a glacier through the process of precip B, and then becomes water in clouds through the process of con C.
 - a. A= evaporation, B= deposition, C= sublimation
 - b. A = condensation, B= precipitation, C= evaporation
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7. Fill in the blanks. Water on the ground becomes water in the soil as a result of grav A _____ energy. Water in the atmosphere becomes water in clouds as a result of kin B _____ energy. Water in clouds becomes water in the atmosphere as the result of grav C _____ energy.

- ☒ a. A = chemical, B = thermal, C = thermal
- ☐ b. A = gravitational, B = gravitational, C = thermal
- ☐ c. A = gravitational, B = thermal, C = thermal
- ☒ d. A = thermal, B = thermal, C = thermal

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10. What happens when plants respire?

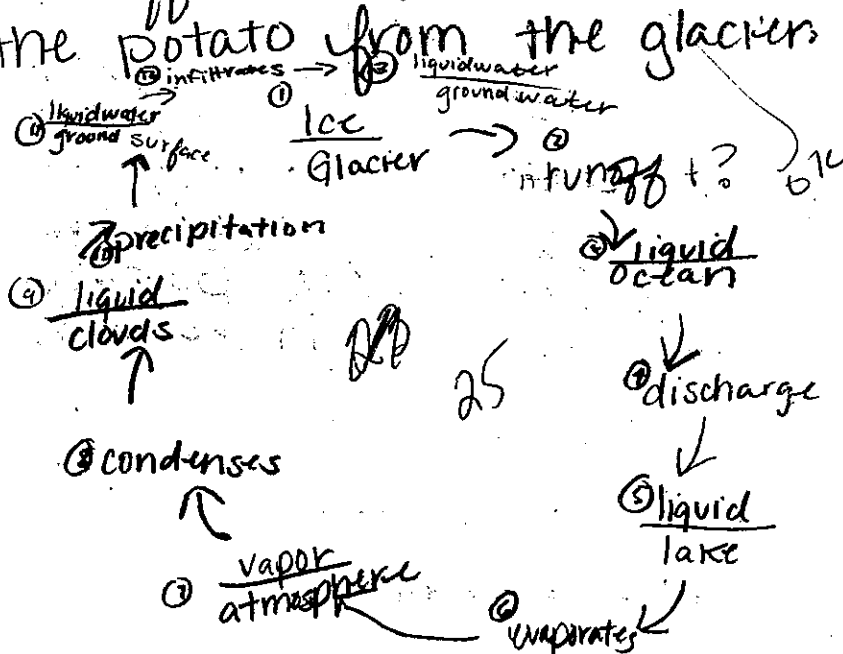
- a. Plants convert biomass into energy
- b. Plants convert energy into biomass
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photosynthesis
sugar and O_2 → carbon dioxide + water
ice melt to water do not refreeze

SHORT ANSWER. 25 points each (50 points total)

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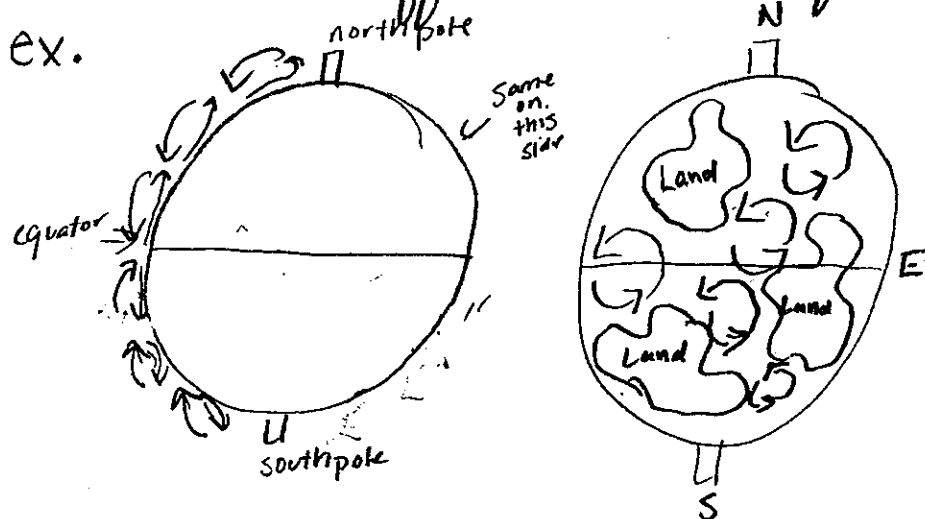
Glaciers have been known to move things like rocks. I believe water molecules could naturally move from a glacier to become part of a potato through runoff. The ice melts from the glaciers and runs off into a reservoir, like a ocean (for example) and ^{discharge} move into a lake (for example) and may evaporates into ^{vapor in} the atmosphere and the condenses into liquid clouds and precipitation as liquid water on ground surface running off and infiltrate the liquid water in the ground soil. This ground soil helps to produce potato, so the water molecule goes through different processes + reservoirs and ends up in the potato from the glacier.



2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
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a. Circulation happens due to convection. The mix of hot and cold air causes thermohaline circulation in ocean. The equator give off hot air and north + south poles give off cold air. During convection these air mix moving water around to different areas of the globe.



18

b. Thermal Energy is causing movement or transformation of water. It is the difference in temps that is causing the effects of the thermohaline circulation.

1. If polar ice contained more salt than the surrounding seawater from which it freezes, the ice would be more dense than the water, creating higher temperature and more evaporation of water into the atmosphere.

EXTRA CREDIT (2 points)

- 2 EC. How are burning wood and respiration similar?
- They both destroy matter during energy conversion
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 - They both convert chemical energy into thermal energy
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40 45
YOUR SCORE:
85

~~XXXXXXXXXX~~
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

1

STUDENT ID #: A41860512; GROUP #: 19

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?

- a. Water molecules become larger
- ☒ b. Gaseous water becomes liquid water
- c. Hydrogen and oxygen atoms combine to form liquid water
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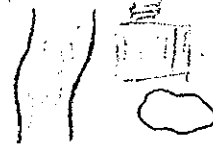
9

2. Which of the following is the largest freshwater reservoir

- ☒ a. The atmosphere
- b. Oceans
- c. Glaciers
- d. Lakes and streams

3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?

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4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.

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- d. Water vapor from the pot evaporates

6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?

- ☒ a. This is what one would predict with global warming *wider temps → more evaporation/precipitation*
- b. This is the opposite of what one would predict with global warming
- c. Predictions about global warming do not address global precipitation.

A 41860512

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

2

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of A energy. Water in the atmosphere becomes water in clouds as a result of B energy. Water in clouds becomes water in the atmosphere as the result of C energy.

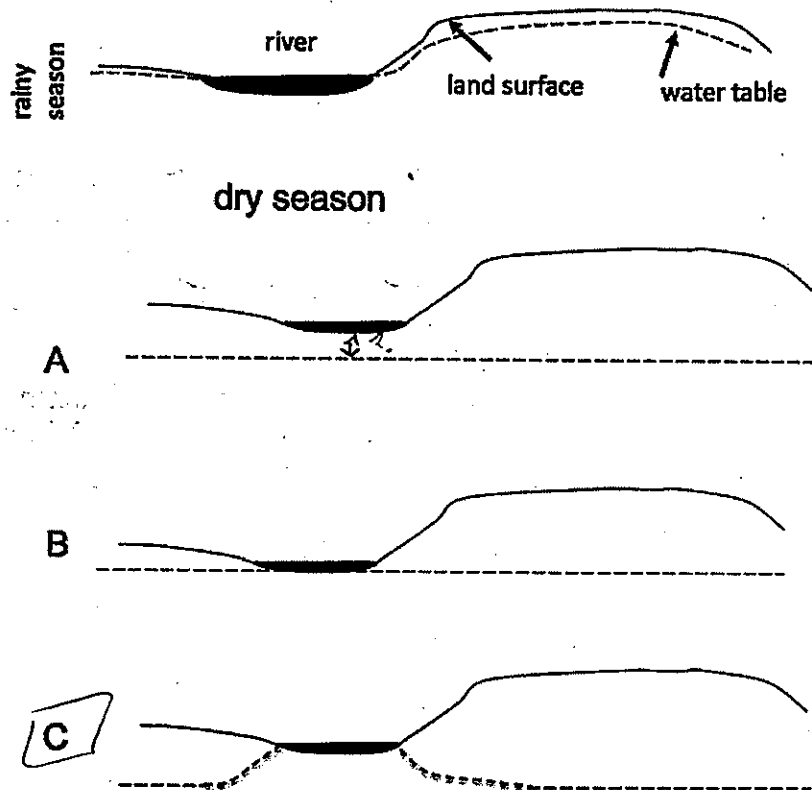
a. A= chemical, B= thermal, C= thermal

b. A = gravitational, B= gravitational, C= thermal

c. A = gravitational, B= thermal, C= thermal

d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:

- a. been greater
b. been less
c. remained the same

10. What happens when plants respire?

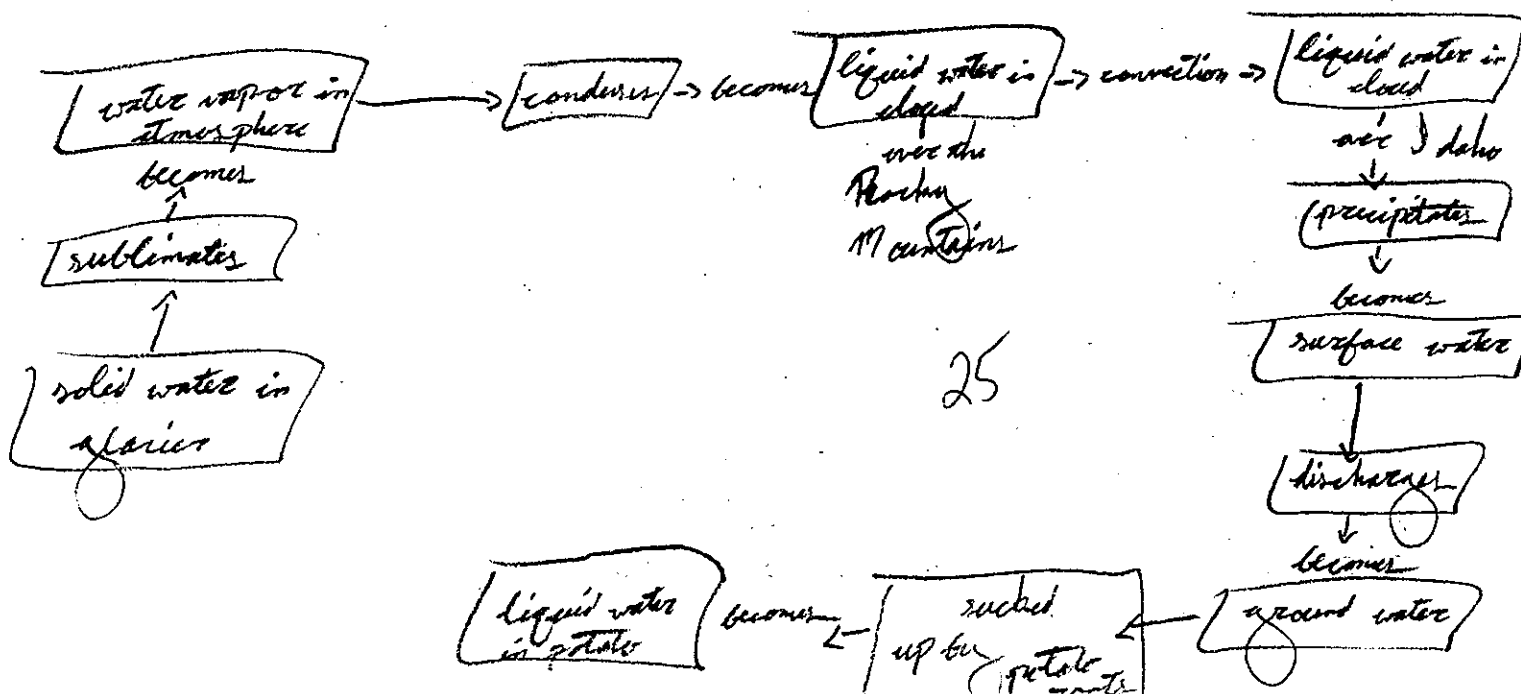
- ~~a.~~ Plants convert biomass into energy
~~b.~~ Plants convert energy into biomass
c. Plants release energy

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water

In a glacier in the Rocky Mountains, there is a glacier. A water molecule on the surface of the glacier sublimates and becomes part of water vapor in the atmosphere. Eventually, the water vapor condenses to form a cloud. Pushed by air in convection, the cloud drifts until it comes to Idaho. The cloud has accumulated so many water droplets by now that the gravitational pull causes many of them to fall down as precipitation. After landing on the surface of the soil, the water molecule is in surface water, which is slowly pulled down by gravity to discharge into the ground and groundwater. The groundwater is right by some potato roots, which suck up the water molecule and transport it along the xylem until it enters a potato.

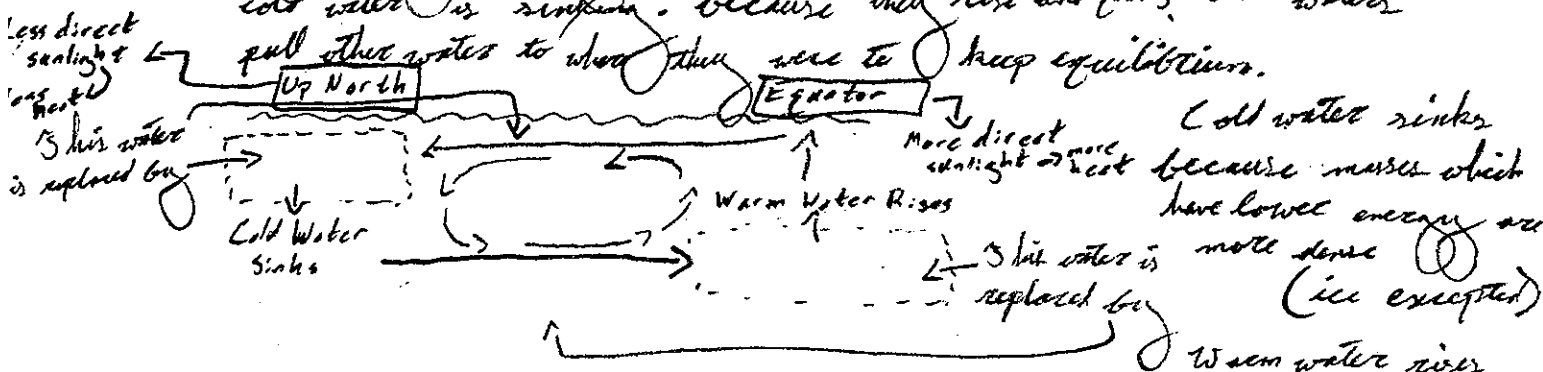


2. When ice forms from seawater, the ice contains less salt than the remaining water.

Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

Circulation occurs due to convection currents. Convection currents are the movement of substance due to relative temperature — in the ocean, warm water rises ^{not so much} and cold water sinks. Water heated by sunlight at the equator rises and flows to areas where cold water is sinking. because they rise and fall, both waters pull other waters to where they were to keep equilibrium.



Even if polar ice drew more salt from ocean water, making that cold water slightly less dense, that would not change the process of convection in which cold water sinks and so thermohaline circulation would not be heavily affected by this process.

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

45 42

YOUR SCORE:

87

STUDENT ID #: A4918010; GROUP #: 20

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 6
 - a. Water molecules become larger
 - b. Gaseous water becomes liquid water
 - ☒ c. Hydrogen and oxygen atoms combine to form liquid water
 - d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
 - a. The atmosphere
 - b. Oceans
 - c. Glaciers
 - d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
 - a. Rainfall and surface runoff into the lake
 - b. Seasonal high water from the Mississippi River
 - c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
 - a. A= evaporation, B= deposition, C= sublimation
 - ☒ b. A = condensation, B= precipitation, C= evaporation
 - c. A= sublimation, B= precipitation, C= evaporation
 - d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
 - a. Liquid water from the pot condenses
 - ☒ b. Liquid water from the pot evaporates
 - c. Water vapor from the pot condenses
 - d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
 - ☒ a. This is what one would predict with global warming
 - b. This is the opposite of what one would predict with global warming
 - c. Predictions about global warming do not address global precipitation.

A 41918010

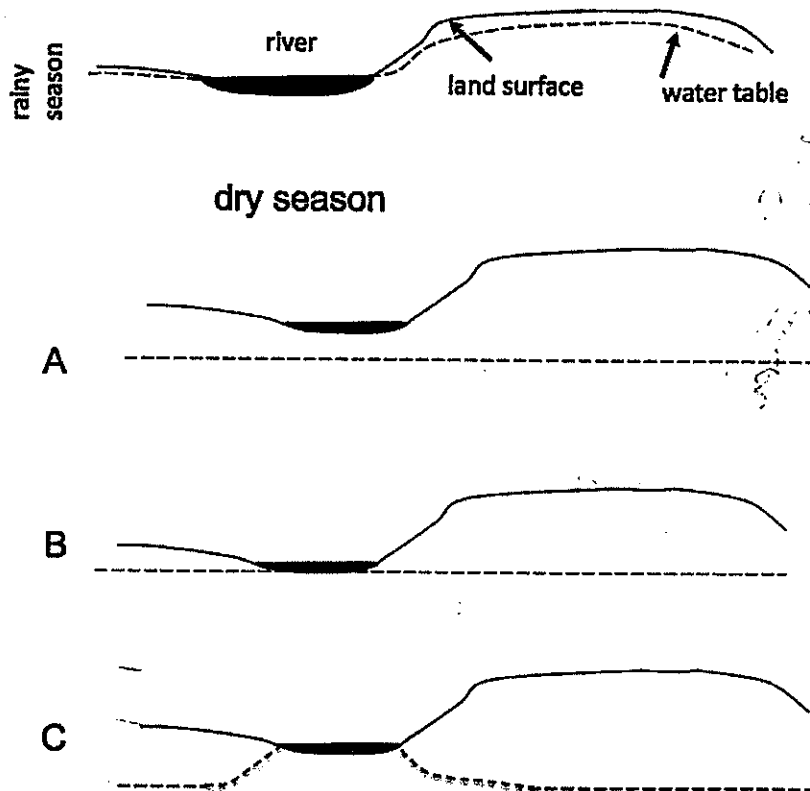
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

2

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
- ☒ b. A = gravitational, B= gravitational, C= thermal
- c. A = gravitational, B= thermal, C= thermal
- ☒ d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?

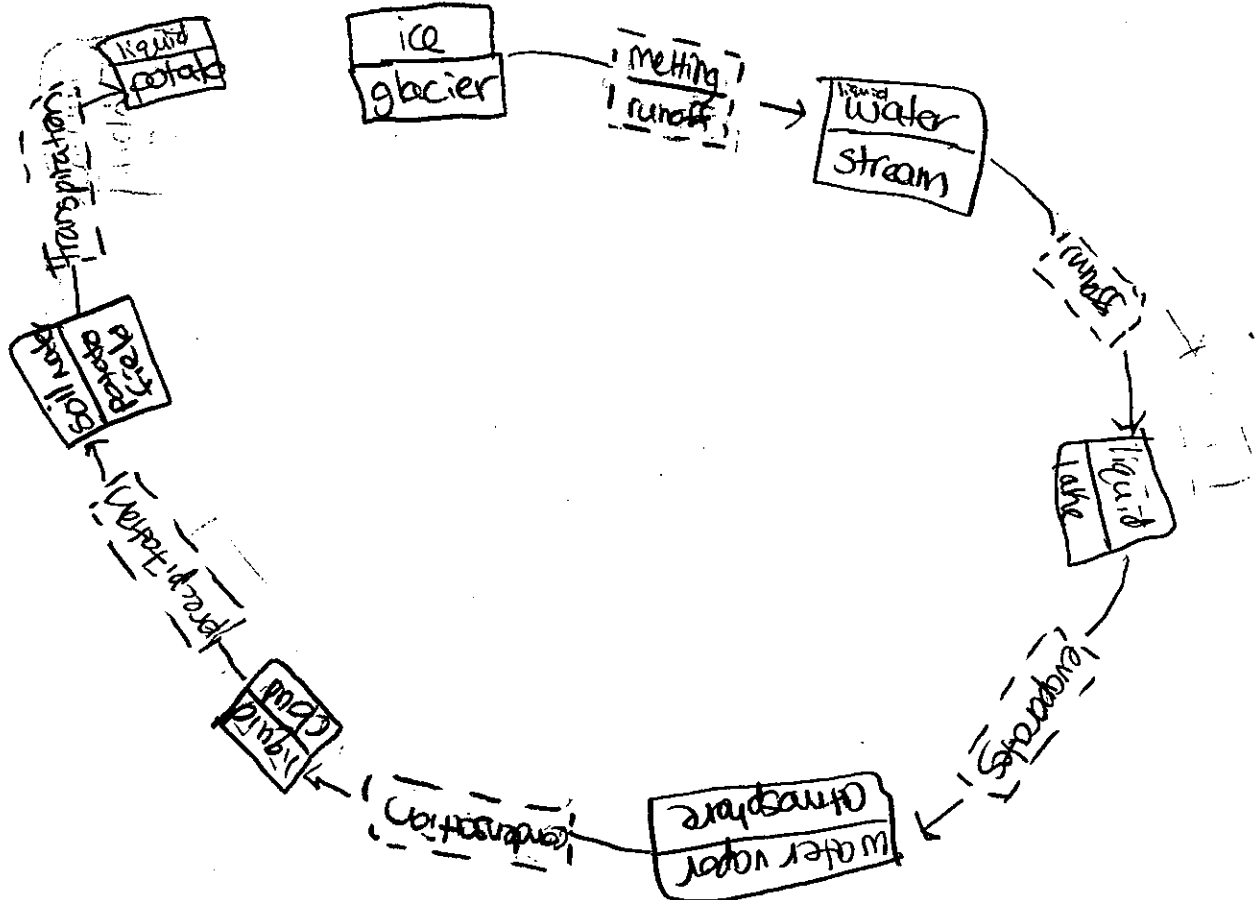


9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- ☒ a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

411918010

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- Water phase at each step in the journey
 - A name for each process that moves or transforms water



25

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - The energy that is causing movement or transformation of water.

Thermohaline circulation is the process that occurs as a result of the different densities of water. The more salty the water is, the denser it is. The denser, saltier water moves out to the polar regions and is then pushed back to the equator because the different densities are trying to return to equilibrium. If polar ice had more salt locked up in it, it would slow down the process of thermohaline circulation. This circulation is driven by gravitational energy. If ice was saltier, it would be denser and held by gravity at the poles longer.

15

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- ☒ They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

30 42

YOUR SCORE:

72

STUDENT ID #: A43332855; GROUP #: 20

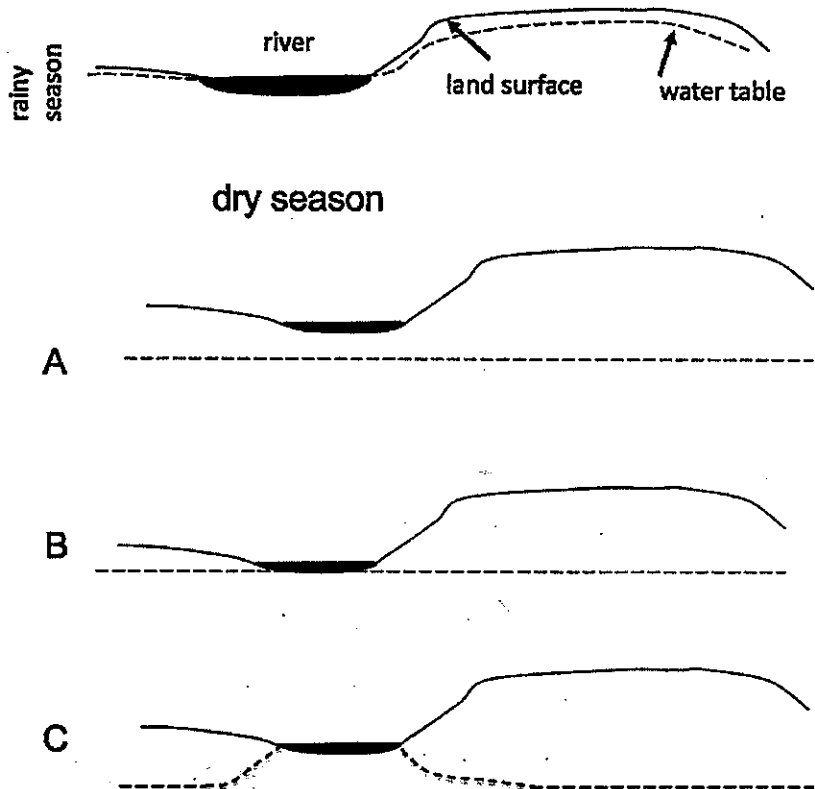
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

- 8
1. What happens when water molecules condense?
 - a. Water molecules become larger
 - b. Gaseous water becomes liquid water
 - c. Hydrogen and oxygen atoms combine to form liquid water
 - d. The temperature of water molecules decreases
 2. Which of the following is the largest freshwater reservoir
 - a. The atmosphere
 - b. Oceans
 - c. Glaciers
 - d. Lakes and streams
 3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
 - a. Rainfall and surface runoff into the lake
 - b. Seasonal high water from the Mississippi River
 - c. Ground water from beneath the surface
 4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
 - a. A= evaporation, B= deposition, C= sublimation
 - b. A = condensation, B= precipitation, C= evaporation
 - c. A= sublimation, B= precipitation, C= evaporation
 - d. A = precipitation, B= freezing, C= condensation
 5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
 - a. Liquid water from the pot condenses
 - b. Liquid water from the pot evaporates
 - c. Water vapor from the pot condenses
 - d. Water vapor from the pot evaporates
 6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
 - a. This is what one would predict with global warming
 - b. This is the opposite of what one would predict with global warming
 - c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?

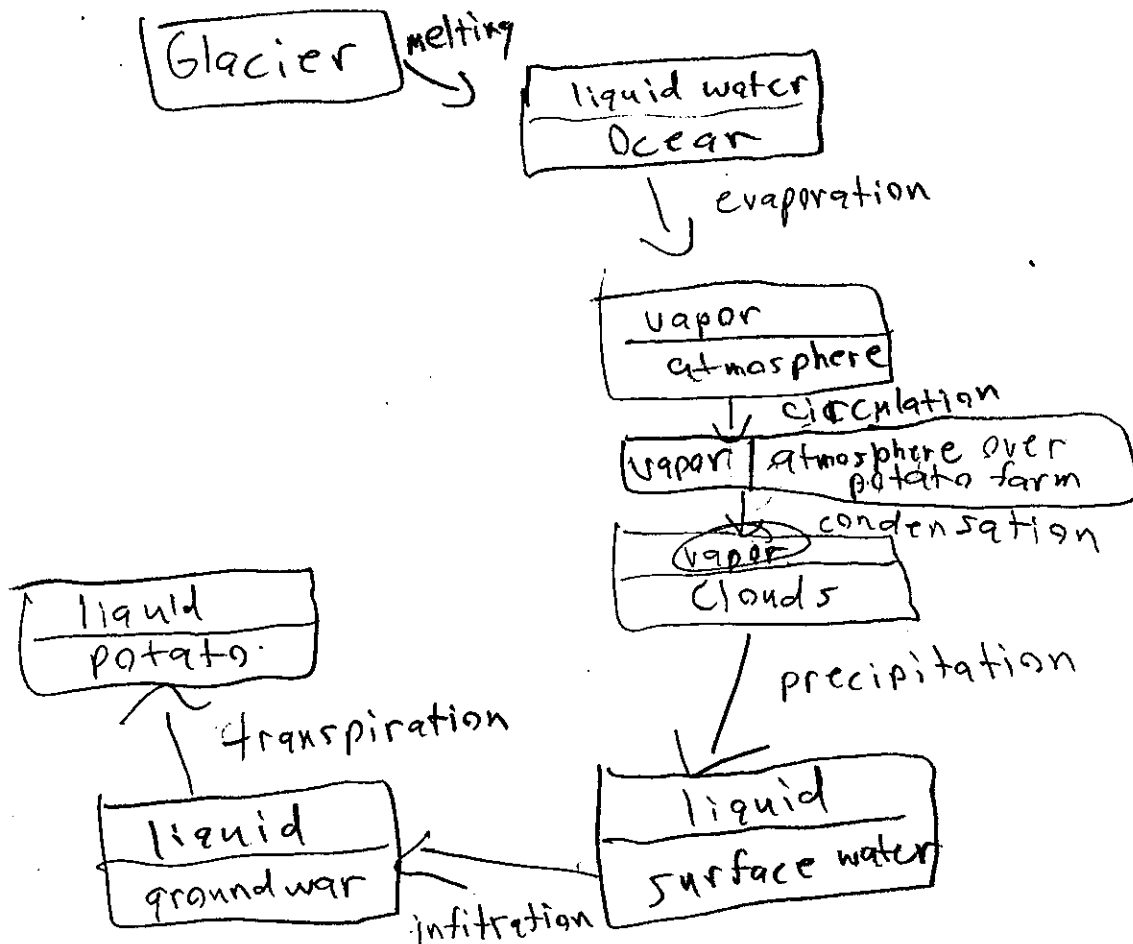


9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

A43332855

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- Water phase at each step in the journey
 - A name for each process that moves or transforms water



22

2. When ice forms from seawater, the ice contains less salt than the remaining water.

Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

Circulation happens because molecules are constantly moving due to pressure or temperature. Thermohaline circulation would not change because that circulation is based on conversions of thermal energy in temperature. However the polar ice with more salt would be more dense than the surrounding seawater causing it to sink and seawater levels to rise. The energy that is causing the movement of water is gravitational energy.

EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- ☒ They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

40 29

YOUR SCORE:

69

STUDENT ID #: A42213991; GROUP #: 20

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

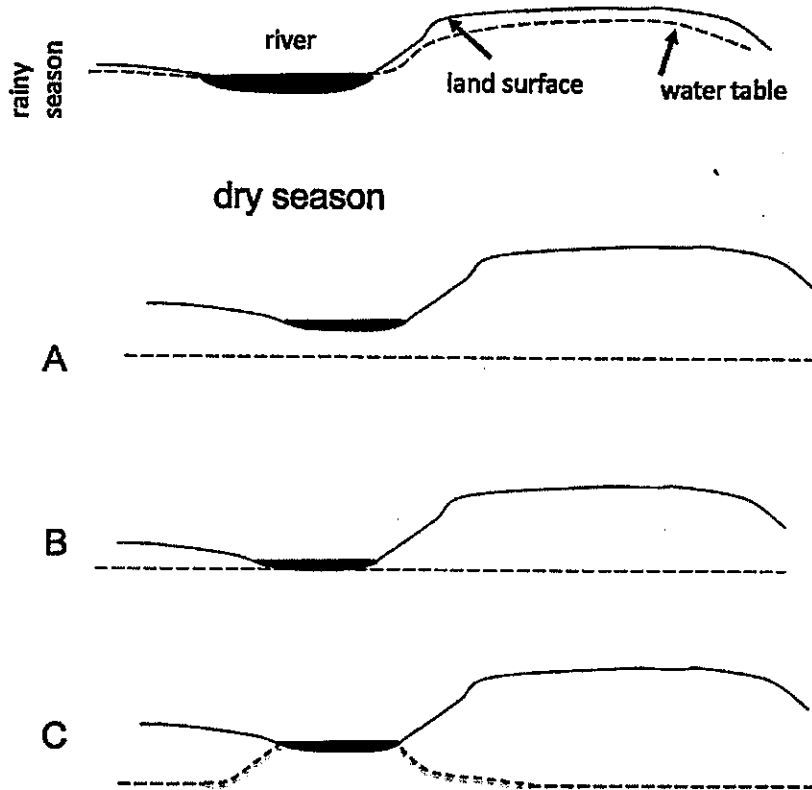
1. What happens when water molecules condense? 7
 - a. Water molecules become larger
 - b. Gaseous water becomes liquid water
 - c. Hydrogen and oxygen atoms combine to form liquid water
 - d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
 - a. The atmosphere
 - b. Oceans
 - c. Glaciers
 - d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
 - a. Rainfall and surface runoff into the lake
 - b. Seasonal high water from the Mississippi River
 - c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of ____A____, then becomes water in a glacier through the process of ____B____, and then becomes water in clouds through the process of ____C____.
 - a. A= evaporation, B= deposition, C= sublimation
 - b. A = condensation, B= precipitation, C= evaporation
 - c. A= sublimation, B= precipitation, C= evaporation
 - d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
 - a. Liquid water from the pot condenses
 - b. Liquid water from the pot evaporates
 - c. Water vapor from the pot condenses
 - d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
 - a. This is what one would predict with global warming
 - b. This is the opposite of what one would predict with global warming
 - c. Predictions about global warming do not address global precipitation.

A4221399/

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

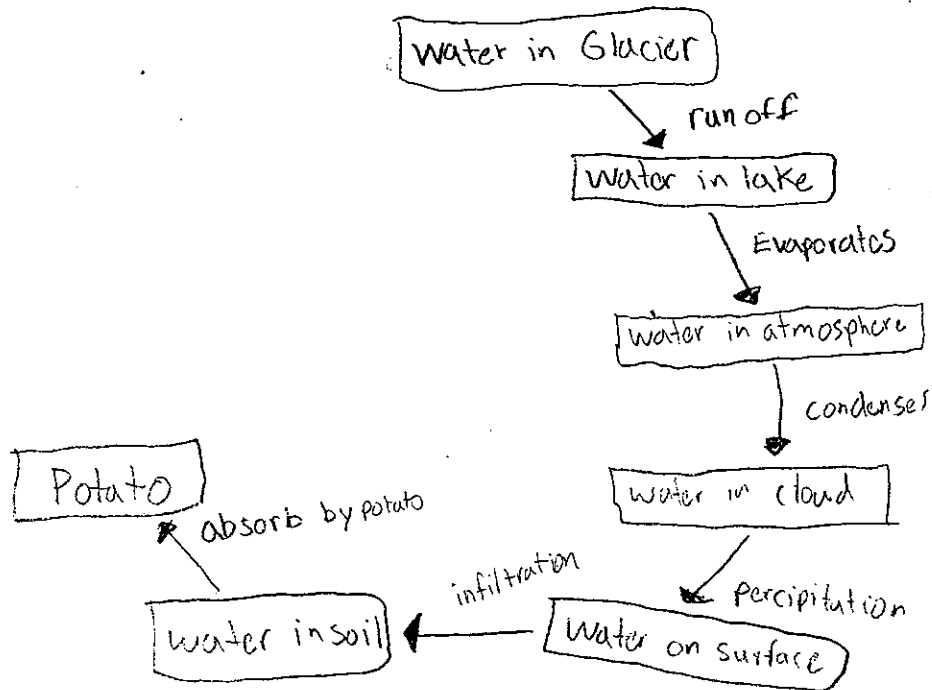
A422/3991

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

3

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- Water phase at each step in the journey
 - A name for each process that moves or transforms water



20

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

The circulation occurs due to the different densities in the water. The ice contains less salt and is less dense than the surrounding seawater, if the ice in the polar regions had more salt in it than the surrounding seawater it would become more dense causing a change in the circulation of the oceans.

2
0

5

2

EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

35 27

YOUR SCORE:

62

STUDENT ID #: K41850835; GROUP #: 20

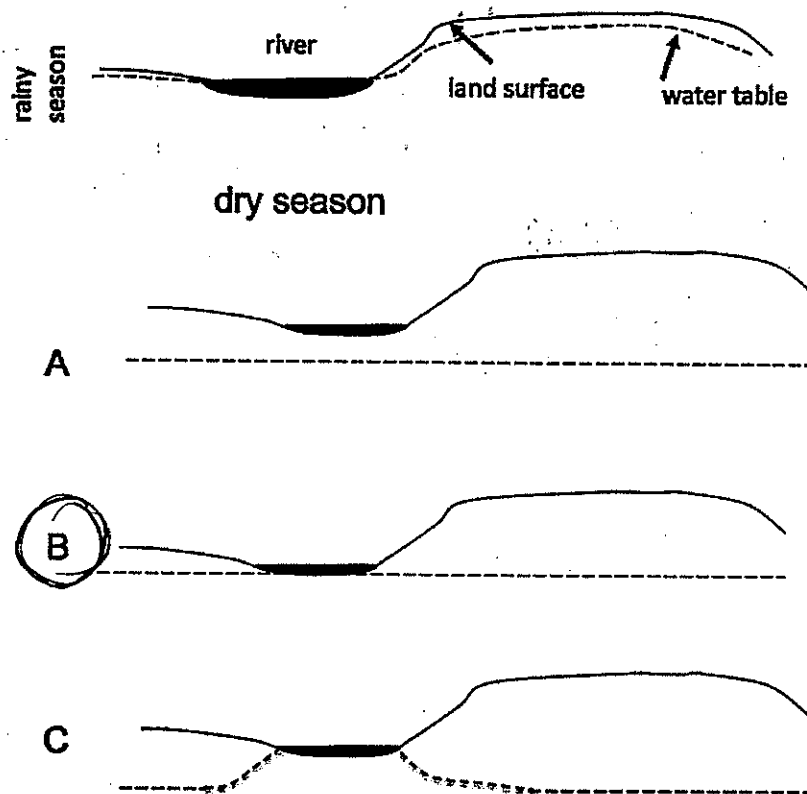
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

- 5
1. What happens when water molecules condense?
☐ a. Water molecules become larger
☒ b. Gaseous water becomes liquid water
☐ c. Hydrogen and oxygen atoms combine to form liquid water
☐ d. The temperature of water molecules decreases
 2. Which of the following is the largest freshwater reservoir
☐ a. The atmosphere
☐ b. Oceans
☒ c. Glaciers
☐ d. Lakes and streams
 3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
☒ a. Rainfall and surface runoff into the lake
☐ b. Seasonal high water from the Mississippi River
☐ c. Ground water from beneath the surface
 4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of _____ A _____, then becomes water in a glacier through the process of _____ B _____, and then becomes water in clouds through the process of _____ C _____.
☐ a. A= evaporation, B= deposition, C= sublimation
☒ b. A = condensation, B= precipitation, C= evaporation
☐ c. A= sublimation, B= precipitation, C= evaporation
☐ d. A = precipitation, B= freezing, C= condensation
 5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
☐ a. Liquid water from the pot condenses
☒ b. Liquid water from the pot evaporates
☐ c. Water vapor from the pot condenses
☐ d. Water vapor from the pot evaporates
 6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
☐ a. This is what one would predict with global warming
☒ b. This is the opposite of what one would predict with global warming
☐ c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A = chemical, B = thermal, C = thermal
 b. A = gravitational, B = gravitational, C = thermal
☒ c. A = gravitational, B = thermal, C = thermal
 d. A = thermal, B = thermal, C = thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?

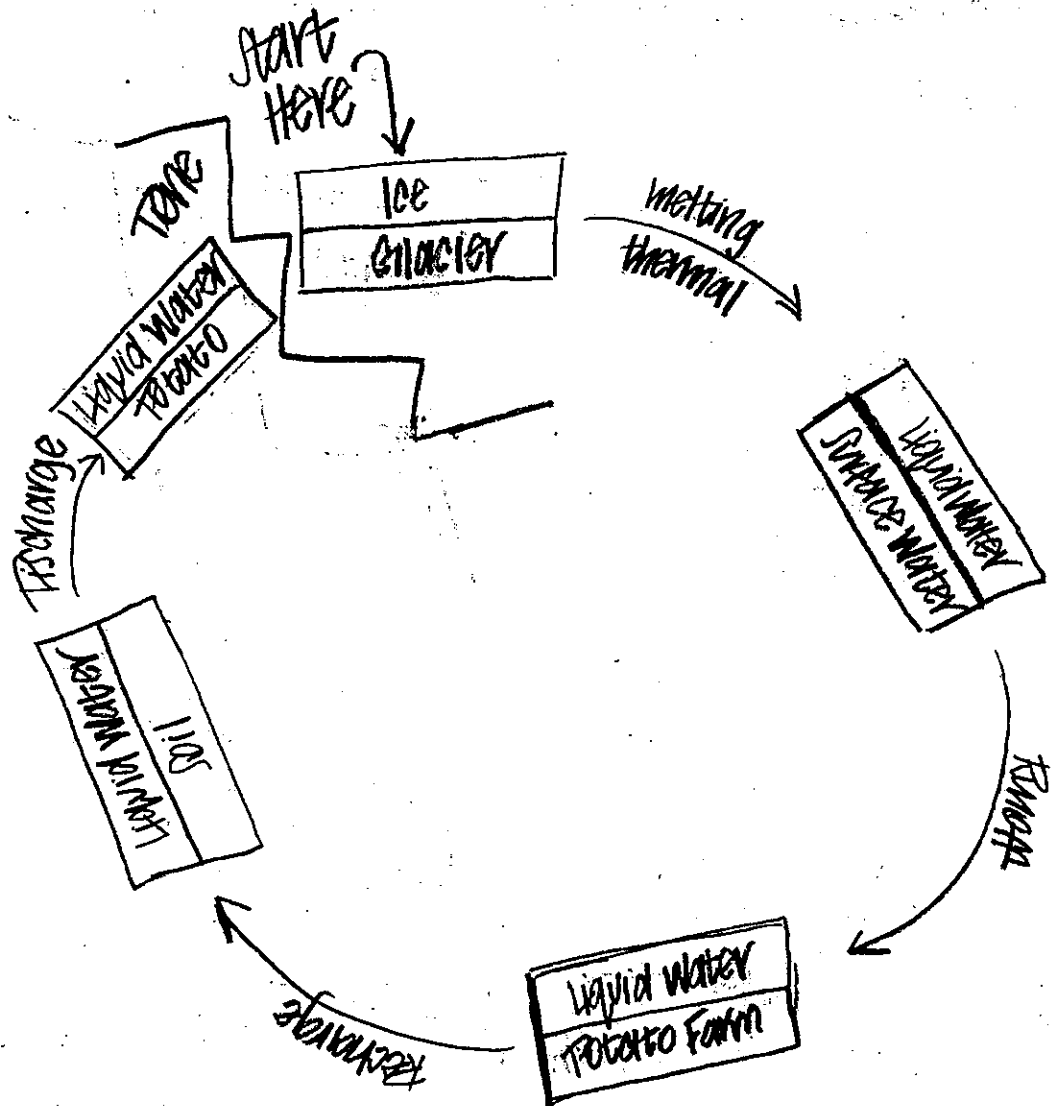


9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- ☒ a. been greater
 b. been less
 c. remained the same
10. What happens when plants respire?
- ☒ a. Plants convert biomass into energy
 b. Plants convert energy into biomass
 c. Plants release energy

A41850835

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- Water phase at each step in the journey
 - A name for each process that moves or transforms water



OK

25

- er. Sorry if this
confusion... hope
fully the numbers
help



STUDENT ID #: A42052431; GROUP #: 21

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 8
a. Water molecules become larger
☒ b. Gaseous water becomes liquid water
c. Hydrogen and oxygen atoms combine to form liquid water
d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
a. The atmosphere
b. Oceans
☒ c. Glaciers
d. Lakes and streams
- $\frac{\text{capacity (amt)}}{\text{rate of flux}} = \Delta T$
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
☒ a. Rainfall and surface runoff into the lake
b. Seasonal high water from the Mississippi River
c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of ____A____, then becomes water in a glacier through the process of ____B____, and then becomes water in clouds through the process of ____C____.
a. A= evaporation, B= deposition, C= sublimation
☒ b. A = condensation, B= precipitation, C= evaporation
c. A= sublimation, B= precipitation, C= evaporation
d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
a. Liquid water from the pot condenses
b. Liquid water from the pot evaporates
☒ c. Water vapor from the pot condenses
d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
☒ a. This is what one would predict with global warming
b. This is the opposite of what one would predict with global warming
c. Predictions about global warming do not address global precipitation.

A42052431

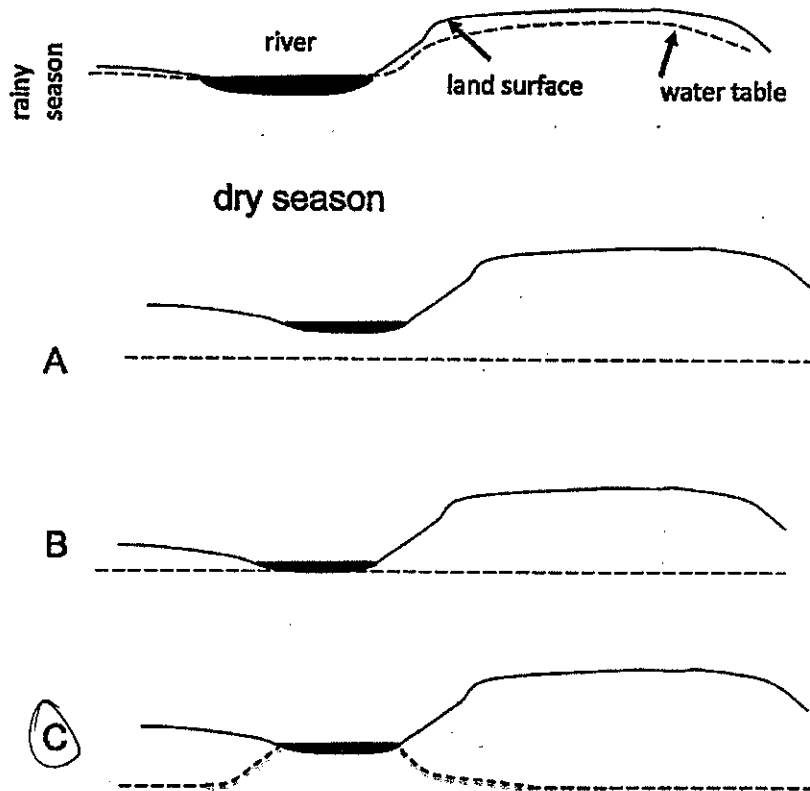
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

2

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- ☒ c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- ☒ a. been greater
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- ☒ a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

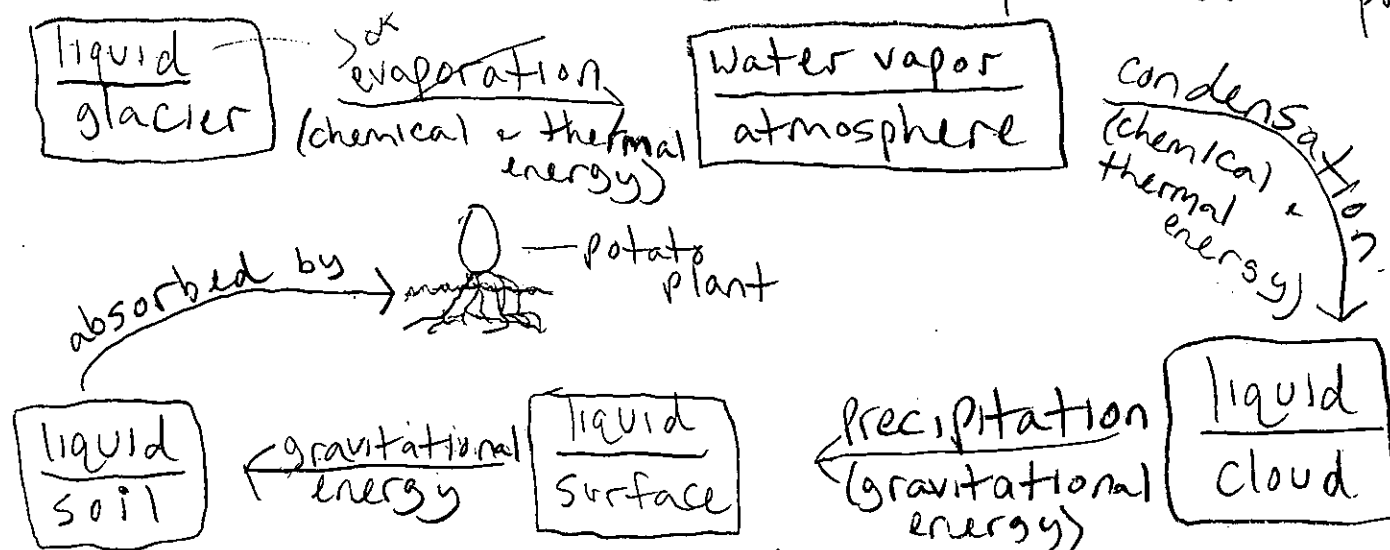
A4205243/

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water

A water molecule on a glacier could evaporate into the atmosphere because of thermal and chemical energy. It would then condense to become liquid in a cloud, also because of thermal and chemical energy. Then, the cloud could have liquid precipitation, which would travel to Earth's surface because of gravitational energy. There, the water that has fallen to the soil of a farm ^(via gravitational energy) could be absorbed by a thirsty potato plant. That is how a water molecule on a glacier could eventually become part of a potato.



Salt water is more dense

A42052431

2. When ice forms from seawater, the ice contains less salt than the remaining water.

Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

Salt water is more dense than freshwater. Because of this, the salt water in the ocean sinks to the bottom. Eventually, because of environmental conditions, the surface water becomes salty and sinks to the bottom, which is one factor that keeps salt water in constant circulation. The wind also blows the water and circulates it around various parts of the planet. If polar ice contained more salt than the surrounding seawater, it would sink in the ocean because it would be more dense than the water surrounding it. This might affect thermohaline circulation because perhaps the ice that has now sunk to the bottom of the ocean is not able to melt as easily because it is not floating on the surface of the water, where the water is warmer than the water in the depths of the ocean. If there is more ice at the bottom of the ocean, there would be less thermohaline circulation because there would be less liquid water in the ocean.

2 EXTRA CREDIT (2 points)
EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

YOUR SCORE:

87

STUDENT ID #: A42271052; GROUP #: 21

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

- 10
1. What happens when water molecules condense?
☐ a. Water molecules become larger
☒ b. Gaseous water becomes liquid water
☐ c. Hydrogen and oxygen atoms combine to form liquid water
☐ d. The temperature of water molecules decreases
 2. Which of the following is the largest freshwater reservoir
☐ a. The atmosphere
☒ b. Oceans
☐ c. Glaciers
☐ d. Lakes and streams
 3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
☐ a. Rainfall and surface runoff into the lake
☐ b. Seasonal high water from the Mississippi River
☒ c. Ground water from beneath the surface
 4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
☐ a. A= evaporation, B= deposition, C= sublimation
☒ b. A = condensation, B= precipitation, C= evaporation
☐ c. A= sublimation, B= precipitation, C= evaporation
☐ d. A = precipitation, B= freezing, C= condensation
 5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
☐ a. Liquid water from the pot condenses
☐ b. Liquid water from the pot evaporates
☒ c. Water vapor from the pot condenses
☐ d. Water vapor from the pot evaporates
 6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
☒ a. This is what one would predict with global warming
☐ b. This is the opposite of what one would predict with global warming
☐ c. Predictions about global warming do not address global precipitation.

A42271052

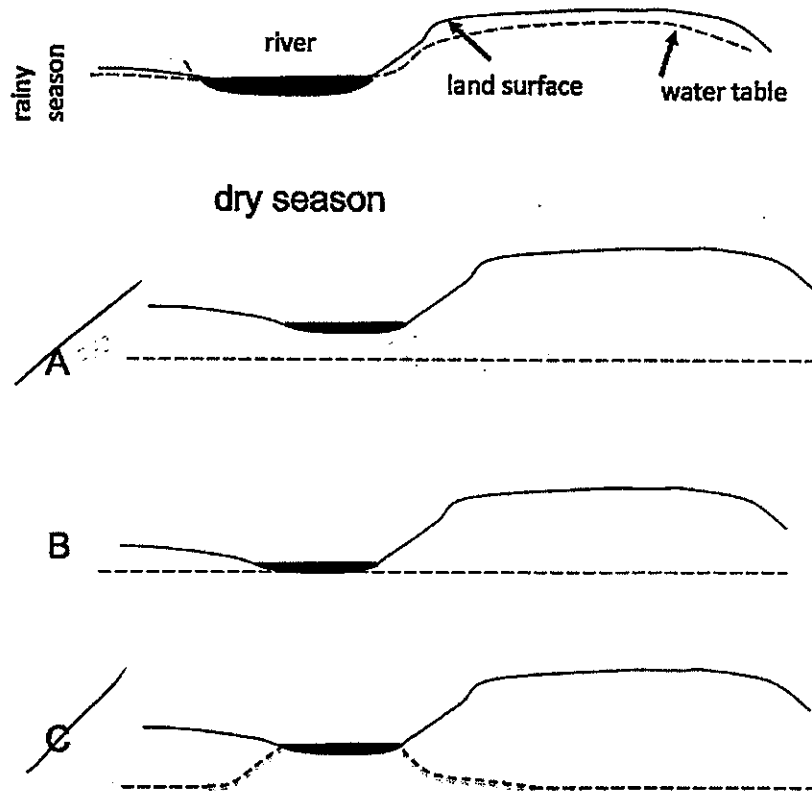
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

2

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
b. A = gravitational, B= gravitational, C= thermal
c. A = gravitational, B= thermal, C= thermal
d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



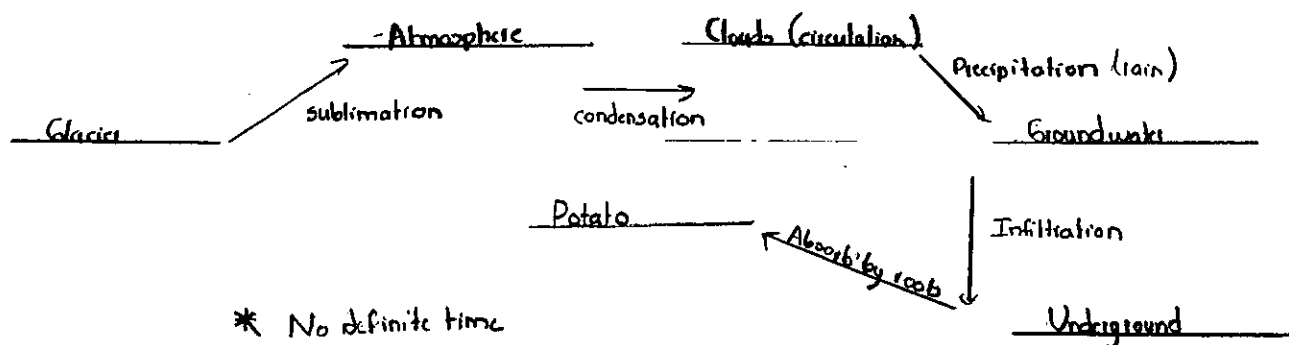
9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
b. been less
c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
b. Plants convert energy into biomass
c. Plants release energy

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water

The length of time and processes in which glacial water becomes part of a potato are most likely lengthy and varied. One interpretation of this journey begins with Arctic glacial ice undergoing the process of sublimation. The solid glacial ice sublimates directly into the atmosphere as water vapor. A large quantity of that water may directly condense or undergo deposition in the area, but for the sake of this illustration much of the water is circulated in the atmosphere. As the water vapor rises in the atmosphere it condenses to form clouds. The clouds are part of a larger weather system that circulates towards the northwestern United States. Eventually the water stored within the cloud collides to form individual droplets of water that defeat incoming updrafts. The water falls as rain (precipitation), and infiltrates the soil. The water table in the area is fairly high, causing the water to part of the immediate underground reservoir. An undefined time later, the potato crop absorbs moisture through the soil. The originally glacial water is, therefore, used in the production of potatoes.



25

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening — explain why that process happens.
- The energy that is causing movement or transformation of water.

? Thermohaline circulation is the result of the density and temperature of oceanwater. If a larger amount of salt was stored within polar ice, then the effects of thermohaline circulation would be weakened. The surrounding seawater would no longer be as dense because of reduced salinity, and the density gradient of the seawater would not be as large. Salt water is also not as easily frozen as freshwater, meaning that the environment would likely present cooler temperatures to sustain larger quantities of salt in glacial ice.

~~5~~

5

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- ☒ They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

50 32

YOUR SCORE:

82

STUDENT ID #: 134628634; GROUP #: 21

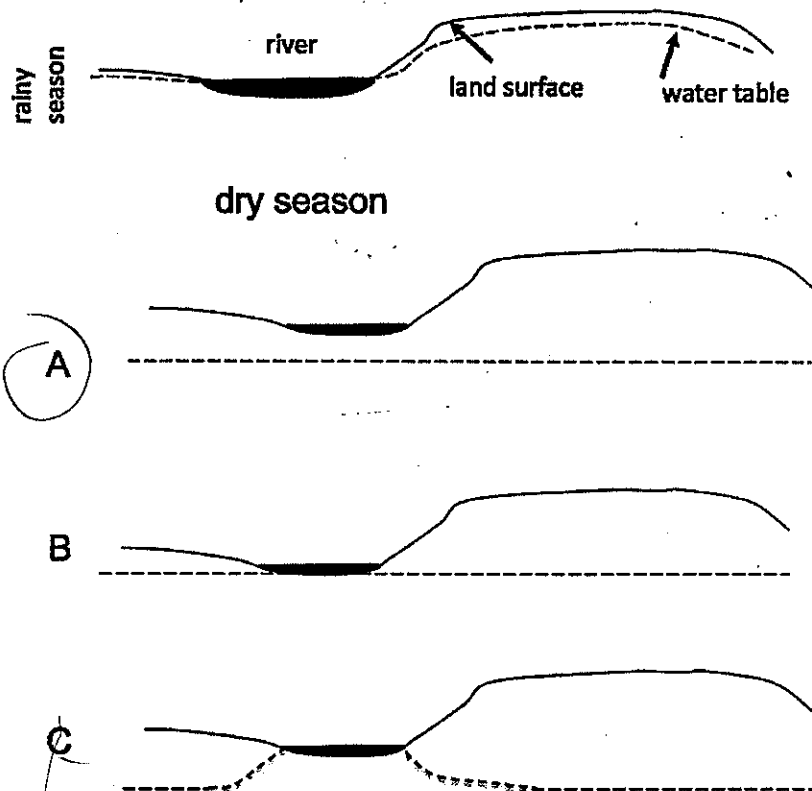
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 6
a. Water molecules become larger
b. Gaseous water becomes liquid water
c. Hydrogen and oxygen atoms combine to form liquid water
☒ d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
a. The atmosphere
b. Oceans
☒ c. Glaciers
d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
a. Rainfall and surface runoff into the lake
b. Seasonal high water from the Mississippi River
☒ c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
a. A= evaporation, B= deposition, C= sublimation
☒ b. A = condensation, B= precipitation, C= evaporation
c. A= sublimation, B= precipitation, C= evaporation
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5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
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6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
a. This is what one would predict with global warming
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☒ c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

A36628634

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- Water phase at each step in the journey
 - A name for each process that moves or transforms water

Water molecules could naturally move from a glacier to a potato because of ^{an alternative process} evaporation, ~~the~~ water will then ~~be exsorbbed~~ release water? the water will then be exsorbbed by the clouds which would then it into different phases? and then it will be released and rain onto potato. or it also could take the thermal and go to the potato through ground water if the glacier is close to land since the glacier occurs near it will be a process when it would have been able to get to the potato

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
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thermohaline would be able to change in my opinion. I don't think; compare the polar ice and seawater because there are so different climates the waters are too different. Thermohaline circulation tends to have more fresh water than very polar ice and even though both have salt waters they kind of be different. The circulation happens because of the participation and the climate? On very different gas and liquid energy to come together which causes the salt not to freeze less when in seawater.

2

EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

30 7

YOUR SCORE:

37

STUDENT ID #: A43535121; GROUP #: 21

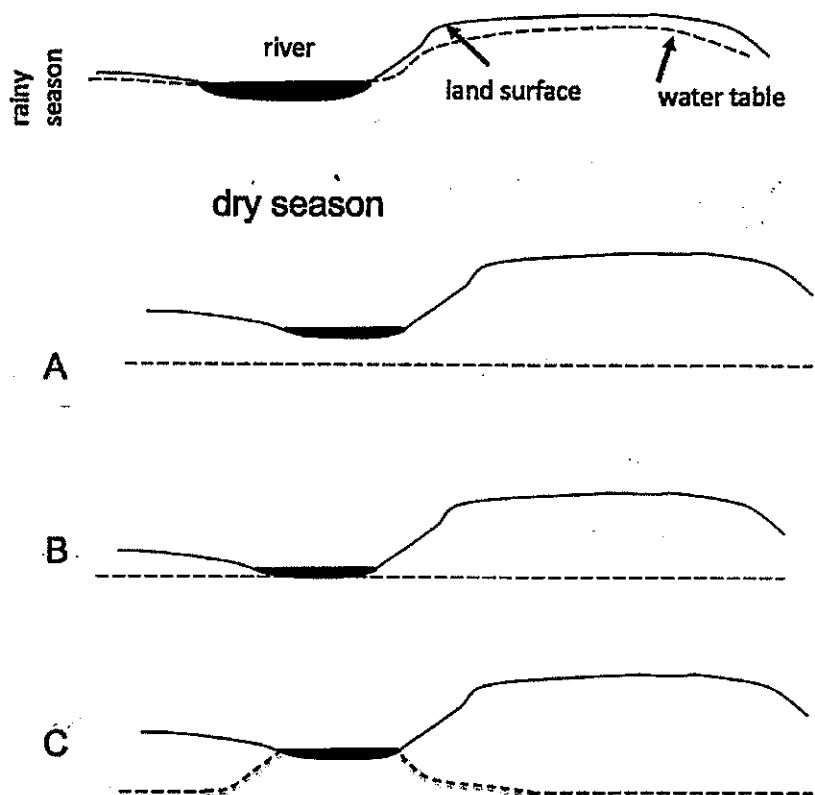
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 7
 - a. Water molecules become larger
 - b. Gaseous water becomes liquid water
 - c. Hydrogen and oxygen atoms combine to form liquid water
 - d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
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 - c. Glaciers
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4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
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 - b. A = condensation, B= precipitation, C= evaporation
 - c. A= sublimation, B= precipitation, C= evaporation
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7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
b. A = gravitational, B= gravitational, C= thermal
c. A = gravitational, B= thermal, C= thermal
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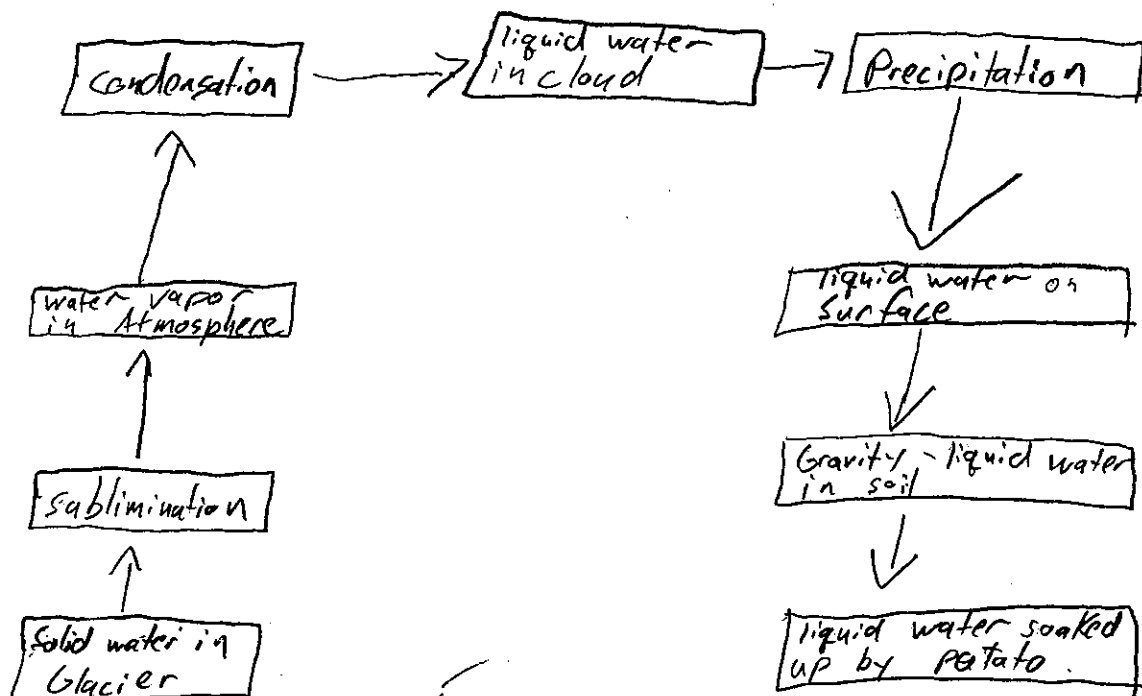
8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
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10. What happens when plants respire?
- a. Plants convert biomass into energy
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c. Plants release energy

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- a. Water phase at each step in the journey
 - b. A name for each process that moves or transforms water



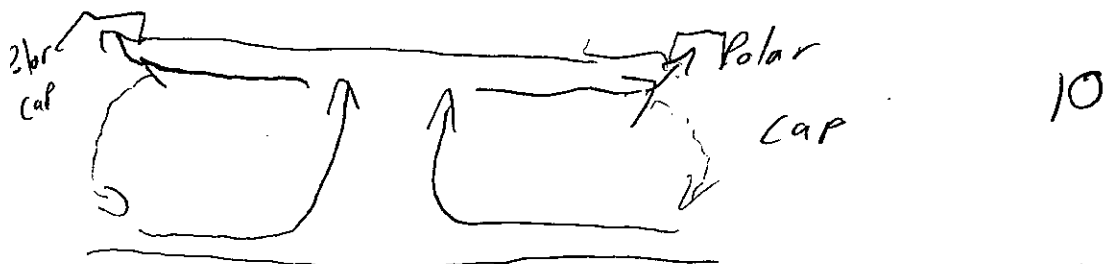
25

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
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 - b. The energy that is causing movement or transformation of water.

Polar Ice with least amount of Salt
Less Dense sea water less salt
Dense sea water containing more salt

Water circulates because of its density which can cause water to rise or sink. It also circulates due to thermal energy.

Multiple things could happen. First if the ice contained more salt than the surrounding water it could become more dense and sink or the salt would cause it to melt easier.



If the polar caps had more salt then it could slow down or stop circulation instead of letting it to continue to circulate.

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- a. They both destroy matter during energy conversion
- b. They both convert thermal energy into gravitational energy
- c. They both convert chemical energy into thermal energy
- d. They both convert kinetic energy into potential energy.

35 37

YOUR SCORE:

72

STUDENT ID #: A4213 4271; GROUP #: 21

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 6
 - a. Water molecules become larger
 - ☒ b. Gaseous water becomes liquid water
 - c. Hydrogen and oxygen atoms combine to form liquid water
 - d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
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 - b. Oceans
 - c. Glaciers
 - ☒ d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
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 - a. This is what one would predict with global warming
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A42134271

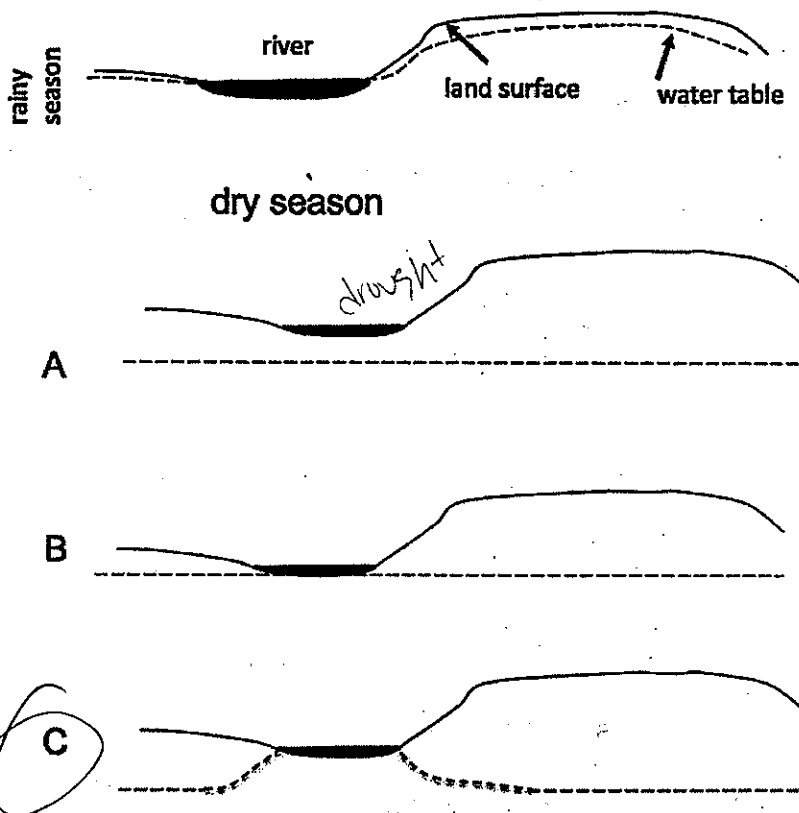
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

2

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
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8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?

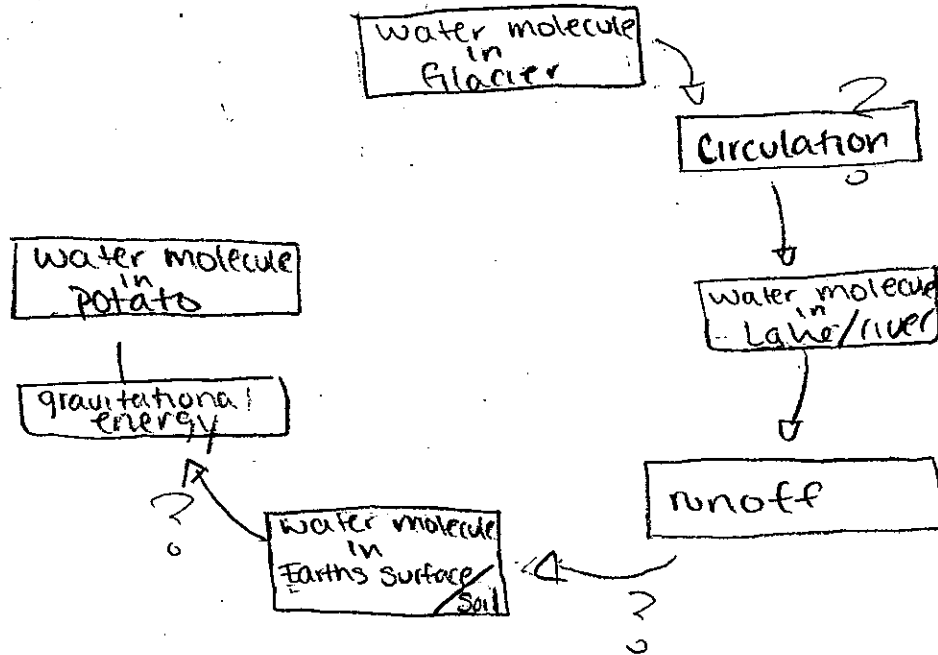


9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
b. been less
c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
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A412134271

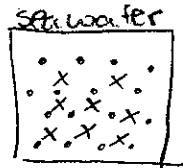
SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
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2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - The energy that is causing movement or transformation of water.

The Thermohaline circulation occurs because of warm and cold water densities. It moves the warmer water towards the surface and the colder water deeper into the ocean.



not so much in oceans

If polar ice contained more salt than the surrounding seawater then it would make water more dense and cause it to fall deeper into the cold ocean water leaving less warm water.

This would change the Thermohaline circulation in a way that the warm water would, or lack of, would reach the lower latitudes of the world, causing colder air, and climates.

\$10

EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

30 520

YOUR SCORE:

46 50

A37669797

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

1

STUDENT ID #: A37669797; GROUP #: 22

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?

9

- a. ~~Water molecules become larger~~
- b. Gaseous water becomes liquid water
- c. Hydrogen and oxygen atoms combine to form liquid water
- d. The temperature of water molecules decreases

2. Which of the following is the largest freshwater reservoir

- a. The atmosphere
- b. Oceans
- c. Glaciers
- d. Lakes and streams

3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?

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- a. A= evaporation, B= deposition, C= sublimation
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- c. A= sublimation, B= precipitation, C= evaporation
- d. A = precipitation, B= freezing, C= condensation

5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?

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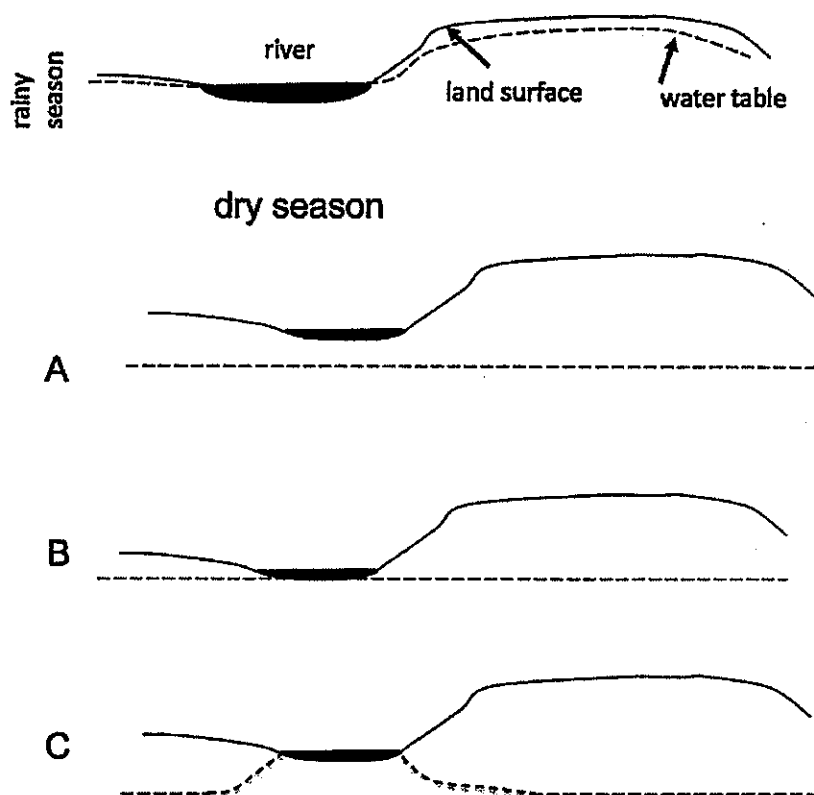
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?

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7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

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- b. A = gravitational, B= gravitational, C= thermal
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8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
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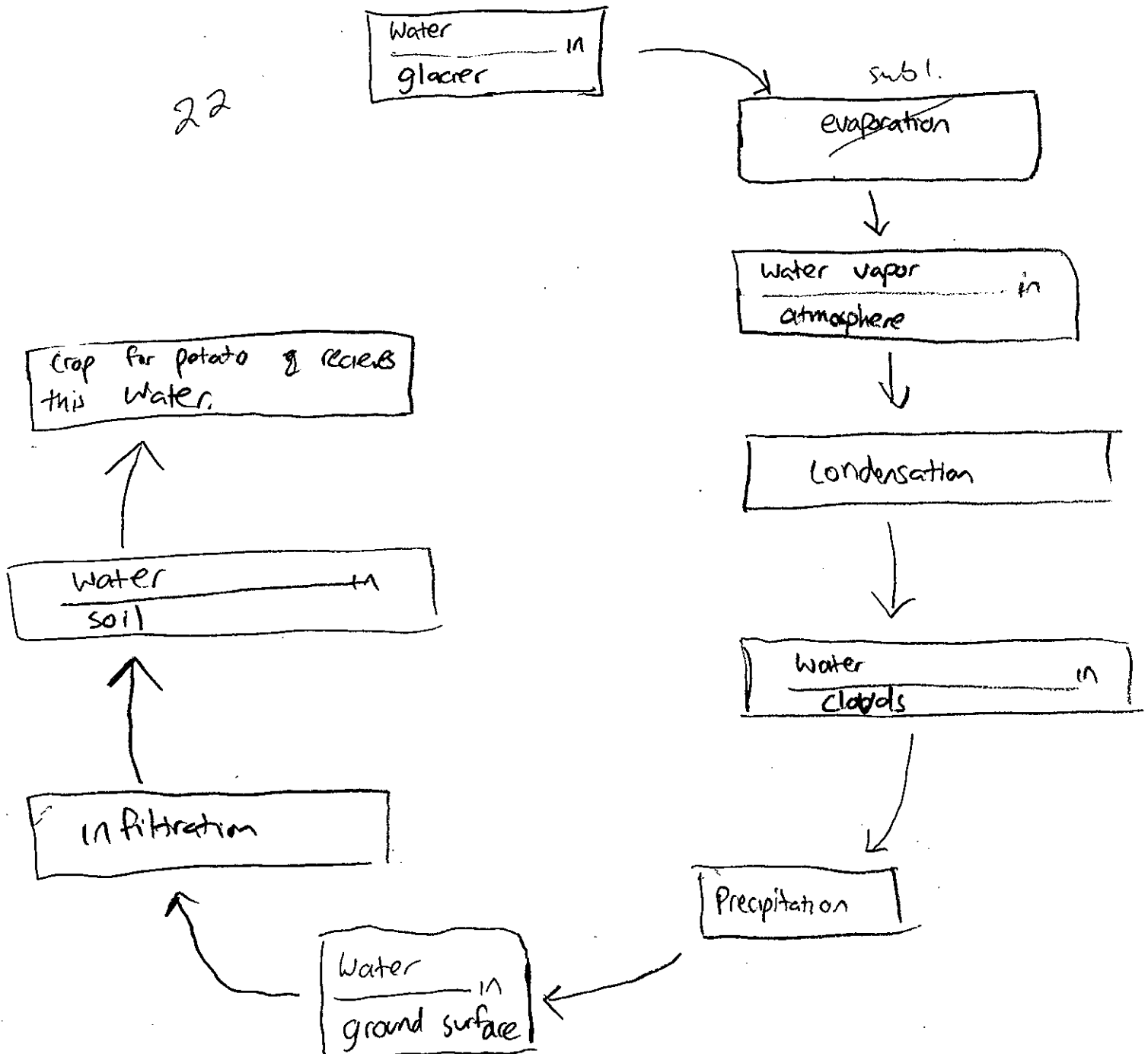
A37669797

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

3

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
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A37669797

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

4

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
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Thermohaline circulation would decrease because the salt that would originally have been circulating is now in the ice. The circulation occurs from warm ^{not really in oceans} water rising then cooling and sinking back down. The density of the salt would also cause it to sink which contributes to the circulation and with less salt in the water, circulation would decrease.

\$10

2 EXTRA CREDIT (2 points)

- EC. How are burning wood and respiration similar?
- a. They both destroy matter during energy conversion
 - b. They both convert thermal energy into gravitational energy
 - c. They both convert chemical energy into thermal energy
 - d. They both convert kinetic energy into potential energy.

45 37

YOUR SCORE:

82

STUDENT ID #: A41724348; GROUP #: 22

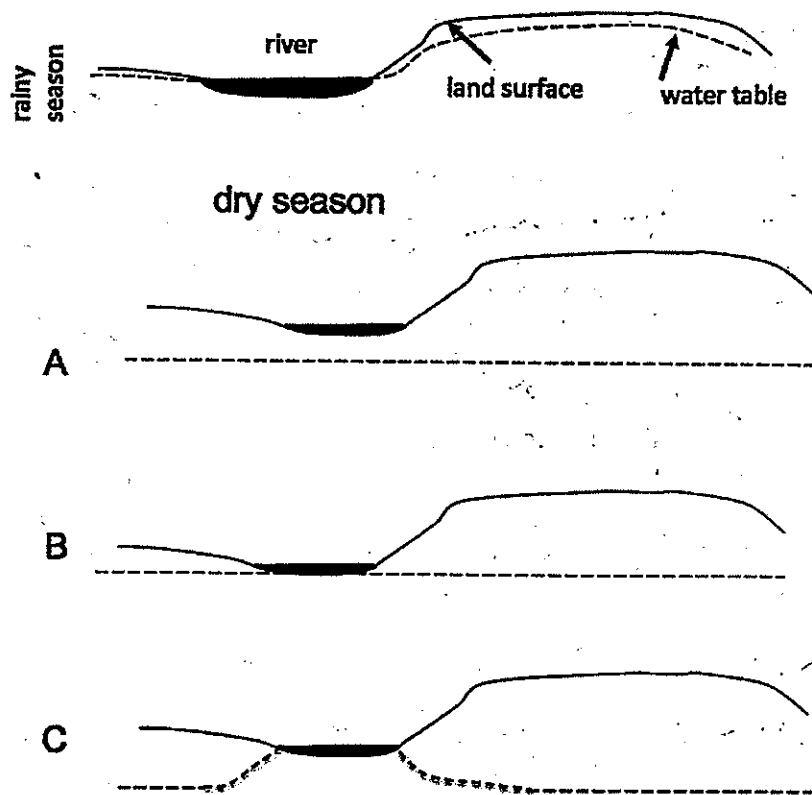
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?
a. Water molecules become larger
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- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

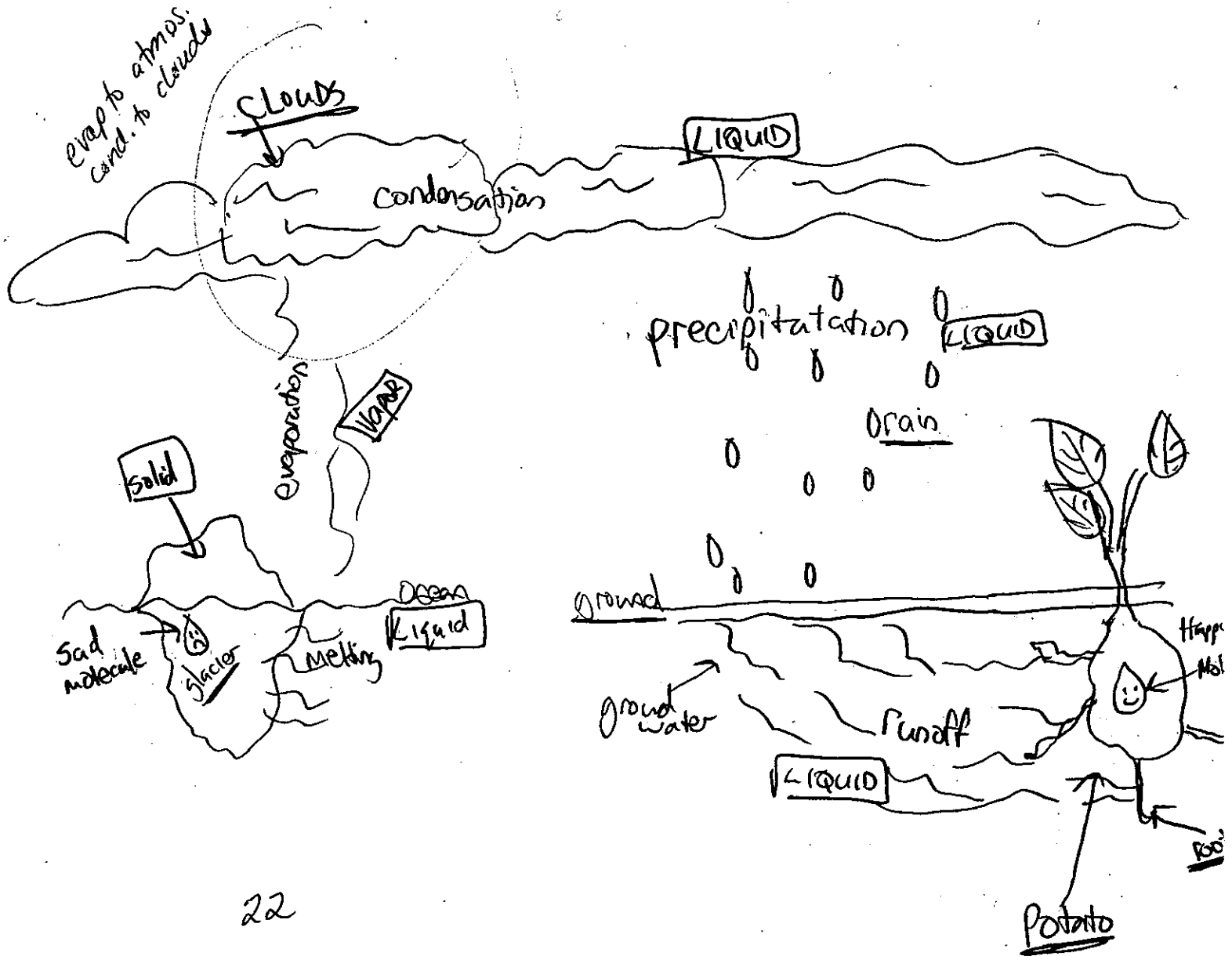
8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- a. Water phase at each step in the journey
 - b. A name for each process that moves or transforms water



2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- a. Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - b. The energy that is causing movement or transformation of water.

Thermohaline circulation occurs because when saltwater freezes the salt in the water is more dense than the water free ice itself therefore when it freezes most of the salt remains in the water.

If polar ice contained more salt than the surrounding seawater, the oceans would be very close to being almost freshwater, because the glaciers would take a majority of the salt from the ocean. And if that was to happen, when the water evaporates into the atmosphere it would stay there longer, because it would have less salt in it.

does not evaporate!

2

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- a. They both destroy matter during energy conversion
- b. They both convert thermal energy into gravitational energy
- c. They both convert chemical energy into thermal energy
- d. They both convert kinetic energy into potential energy.

35 26

YOUR SCORE:

61

STUDENT ID #: A42839439; GROUP #: 22

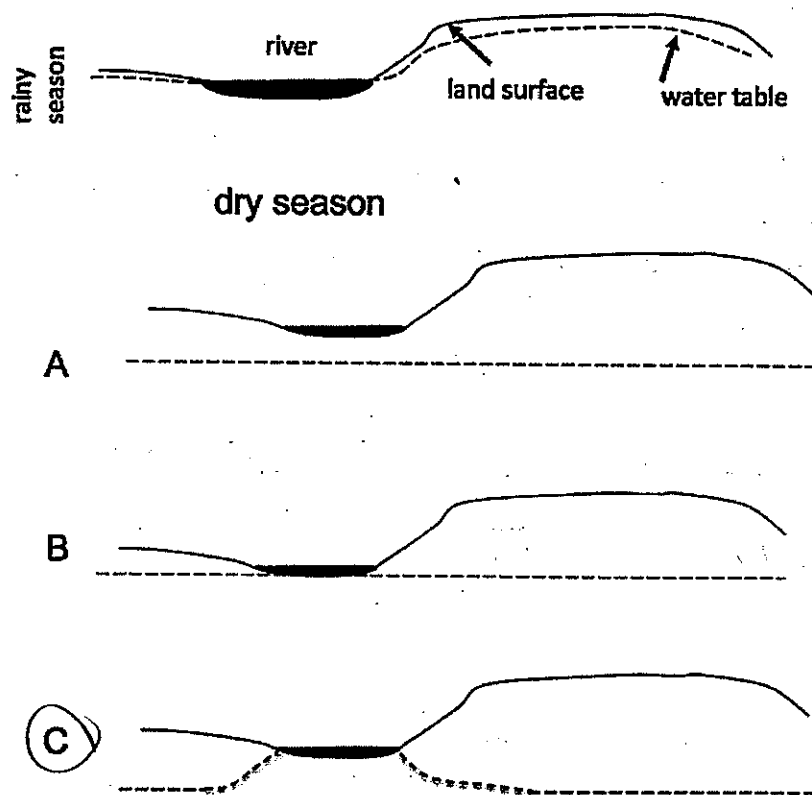
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?
a. Water molecules become larger
☒ b. Gaseous water becomes liquid water
c. Hydrogen and oxygen atoms combine to form liquid water
d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
a. The atmosphere
☒ b. Oceans
☒ c. Glaciers
d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
☒ a. Rainfall and surface runoff into the lake
b. Seasonal high water from the Mississippi River
c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
a. A= evaporation, B= deposition, C= sublimation
☒ b. A= condensation, B= precipitation, C= evaporation
c. A= sublimation, B= precipitation, C= evaporation
d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
a. Liquid water from the pot condenses
☒ b. Liquid water from the pot evaporates
c. Water vapor from the pot condenses
d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
a. This is what one would predict with global warming
b. This is the opposite of what one would predict with global warming
☒ c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

a. A= chemical, B= thermal, C= thermal
 b. A = gravitational, B= gravitational, C= thermal
 c. A = gravitational, B= thermal, C= thermal
 d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 b. been less
 c. remained the same

10. What happens when plants respire?
- a. Plants convert biomass into energy
 b. Plants convert energy into biomass
 c. Plants release energy

A42839439

ISP 203A: GLOBAL CHANGE

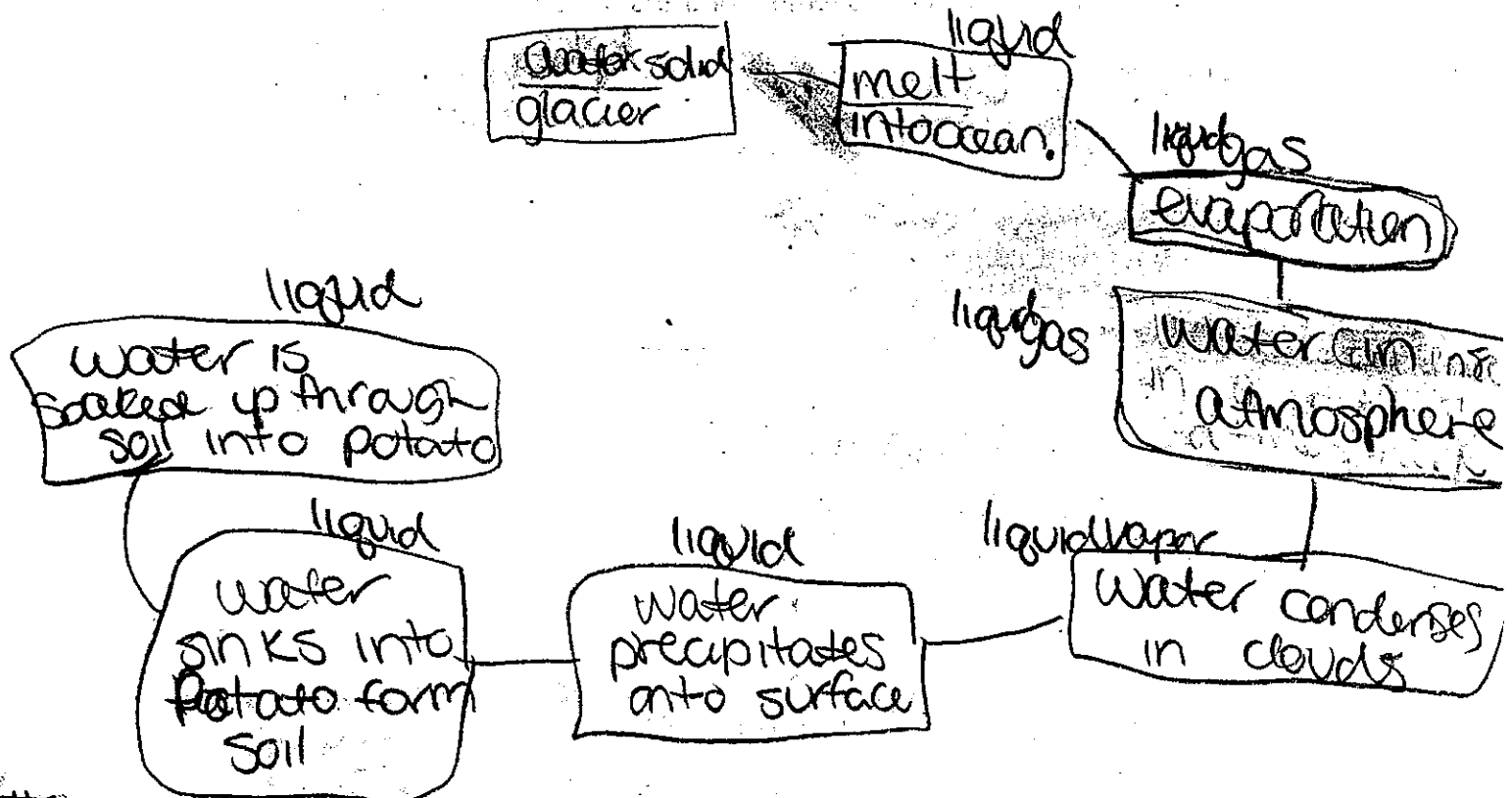
3

EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water



The water first begins at the ocean as a solid in the glacier. Then it melts into the ocean. The water molecules from the ocean then evaporate into the atmosphere. From there, the gas then condenses into the clouds. Precipitation then happens & the water molecules precipitate onto the form & sink into the soil to get to the potato plant.

0/4

25

A42839439

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

4

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - The energy that is causing movement or transformation of water.

Thermohaline circulation would decrease because the amount of salt that is circulating in the remaining parts of the ocean. It would also depend on the mass ratio of how big the glacier is compared to the body of water. If the polar ice contained more salt than the surrounding water, the salt would not circulate as rapidly. The polar ice would also be more dense because of the amount of salt. Gravitational energy would then become a factor in the equation. The salt water that has less salt because the amount freezing in the glacier will have more freezing in the ocean & less thermohaline circulation.

10

10

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

40 37

YOUR SCORE:

17

~~SECRET~~

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

1

STUDENT ID #: A42829869; GROUP #: 22

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

- 8
1. What happens when water molecules condense?
☐ a. Water molecules become larger
☒ b. Gaseous water becomes liquid water
☐ c. Hydrogen and oxygen atoms combine to form liquid water
☐ d. The temperature of water molecules decreases
 2. Which of the following is the largest freshwater reservoir
☐ a. The atmosphere
☐ b. Oceans
☒ c. Glaciers
☐ d. Lakes and streams
 3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
☐ a. Rainfall and surface runoff into the lake
☐ b. Seasonal high water from the Mississippi River
☒ c. Ground water from beneath the surface
 4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
☒ a. A= evaporation, B= deposition, C= sublimation
☐ b. A = condensation, B= precipitation, C= evaporation
☐ c. A= sublimation, B= precipitation, C= evaporation
☐ d. A = precipitation, B= freezing, C= condensation
 5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
☐ a. Liquid water from the pot condenses
☒ b. Liquid water from the pot evaporates
☐ c. Water vapor from the pot condenses
☐ d. Water vapor from the pot evaporates
 6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
☒ a. This is what one would predict with global warming
☐ b. This is the opposite of what one would predict with global warming
☐ c. Predictions about global warming do not address global precipitation.

A42829869

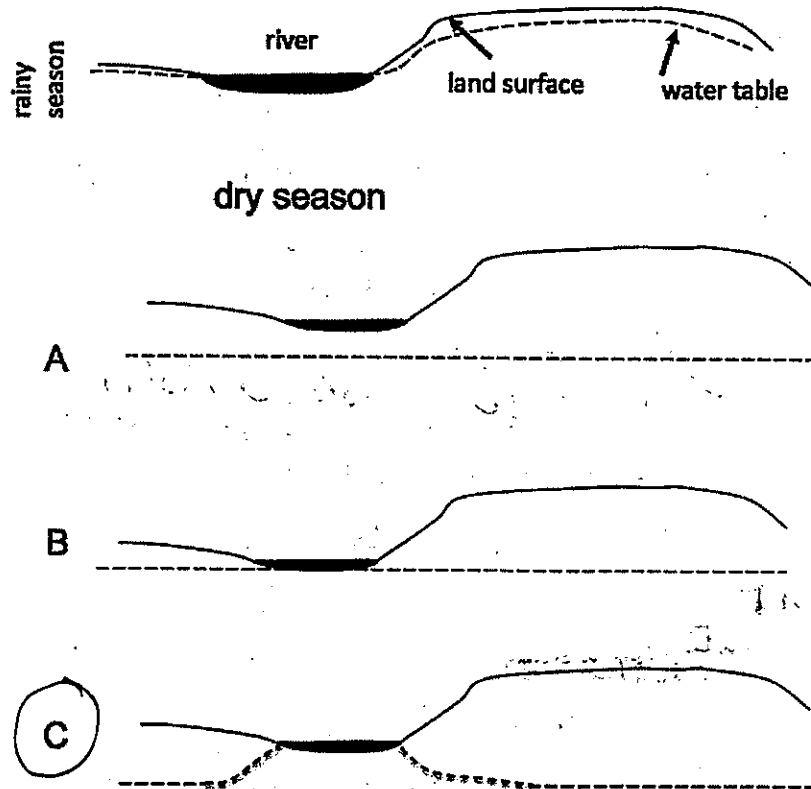
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

2

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A = chemical, B = thermal, C = thermal
b. A = gravitational, B = gravitational, C = thermal
c. A = gravitational, B = thermal, C = thermal
d. A = thermal, B = thermal, C = thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:

- a. been greater
b. been less
c. remained the same

Handwritten: 1.9

$$\frac{0.9}{1} = 0.9$$

$$\frac{1.9}{1} = 1.9$$

10. What happens when plants respire?

- a. Plants convert biomass into energy
b. Plants convert energy into biomass
c. Plants release energy

Handwritten: release heat

Handwritten: in form of energy

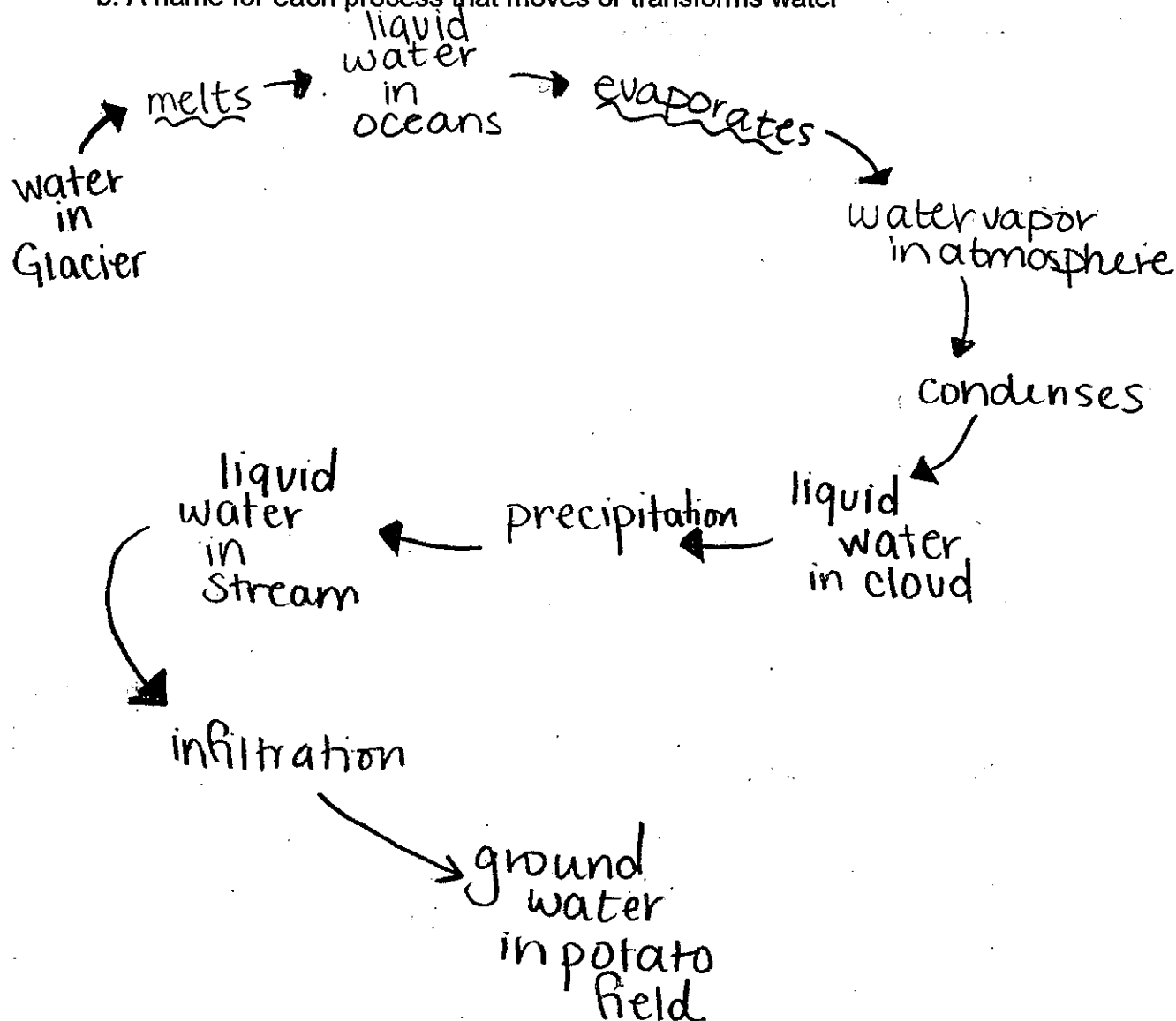
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A42829869

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

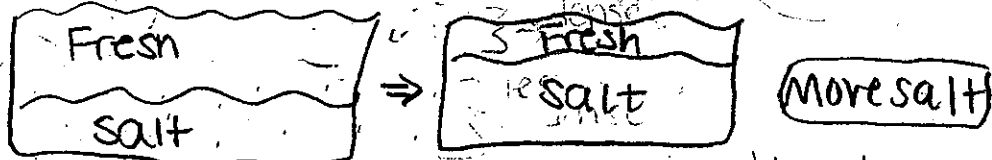
- Water phase at each step in the journey
- A name for each process that moves or transforms water



25

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - The energy that is causing movement or transformation of water.

Circulation happens because of density differences. Less dense, colder, items sink. Warm, denser items rise. For example, water with more amount of haline will sink and freshwater will rise. Same goes for air, warm air rises, cold air sinks. Temperature is an important energy source because when things heat up they become dense and vice versa with cold air and this causes density differences. If more salt were added to the surrounding ice then water would become saltier when it melts, which makes the water more dense & therefore the salt water content at the bottom of the ocean will become greater. Higher density = higher temperatures in oceans. The ocean currents that drive the thermohaline circulation will carry more amounts of warmer air and temperatures at the poles may rise.



EXTRA CREDIT (2 points)

- 7 EC. How are burning wood and respiration similar?
- They both destroy matter during energy conversion
 - They both convert thermal energy into gravitational energy
 - ☒ They both convert chemical energy into thermal energy
 - They both convert kinetic energy into potential energy.

40 42

YOUR SCORE:

82

STUDENT ID #: A41823312; GROUP #: 10 23

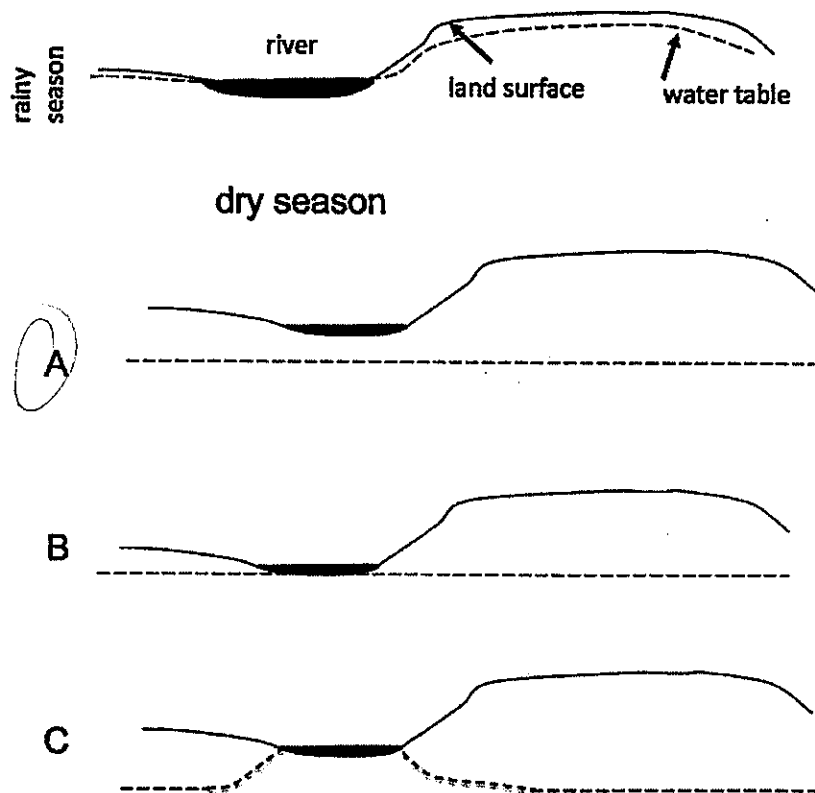
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?
☒ a. Water molecules become larger
☐ b. Gaseous water becomes liquid water
☐ c. Hydrogen and oxygen atoms combine to form liquid water
☐ d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
☒ a. The atmosphere
☐ b. Oceans
☐ c. Glaciers
☐ d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
☐ a. Rainfall and surface runoff into the lake
☐ b. Seasonal high water from the Mississippi River
☒ c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
☐ a. A= evaporation, B= deposition, C= sublimation
☒ b. A = condensation, B= precipitation, C= evaporation
☐ c. A= sublimation, B= precipitation, C= evaporation
☐ d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
☐ a. Liquid water from the pot condenses
☐ b. Liquid water from the pot evaporates
☐ c. Water vapor from the pot condenses
☒ d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
☒ a. This is what one would predict with global warming
☐ b. This is the opposite of what one would predict with global warming
☐ c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- ☒ c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - ☒ c. Plants release energy

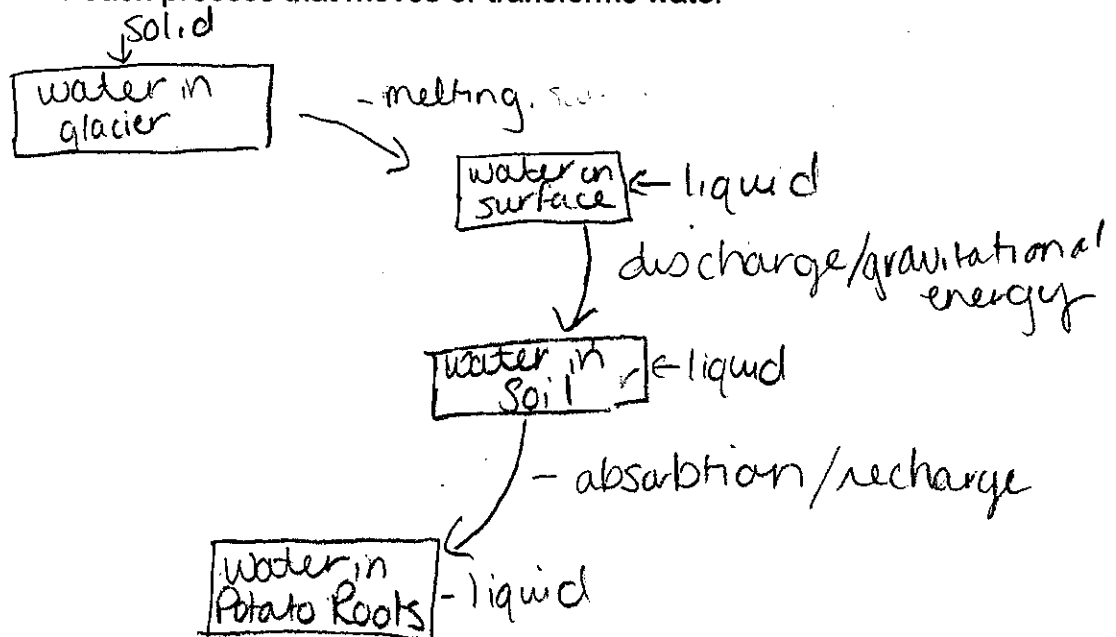
A41823312

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

3

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- Water phase at each step in the journey
 - A name for each process that moves or transforms water



OK

25

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - The energy that is causing movement or transformation of water.

Circulation would change because the ice of the seawater would be more dense than the seawater underneath it, the ice would sink because of its higher density rather than floating on top. Circulation happens because the movement of molecules or temperature causes changes in density which causes shifts of placement of that certain group of matter. Circulation would include ice and ice water into this by the change. Thermal energy would cause this movement.

10



2

EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

30 37

YOUR SCORE:

67

STUDENT ID #: A43050270; GROUP #: 23

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?
a. Water molecules become larger
☒ b. Gaseous water becomes liquid water
c. Hydrogen and oxygen atoms combine to form liquid water
d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
a. The atmosphere
b. Oceans
☒ c. Glaciers
d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
☒ a. Rainfall and surface runoff into the lake
b. Seasonal high water from the Mississippi River
c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
a. A= evaporation, B= deposition, C= sublimation
☒ b. A = condensation, B= precipitation, C= evaporation
c. A= sublimation, B= precipitation, C= evaporation
d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
a. Liquid water from the pot condenses
b. Liquid water from the pot evaporates
☒ c. Water vapor from the pot condenses
d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
☒ a. This is what one would predict with global warming
b. This is the opposite of what one would predict with global warming
c. Predictions about global warming do not address global precipitation.

A43050270

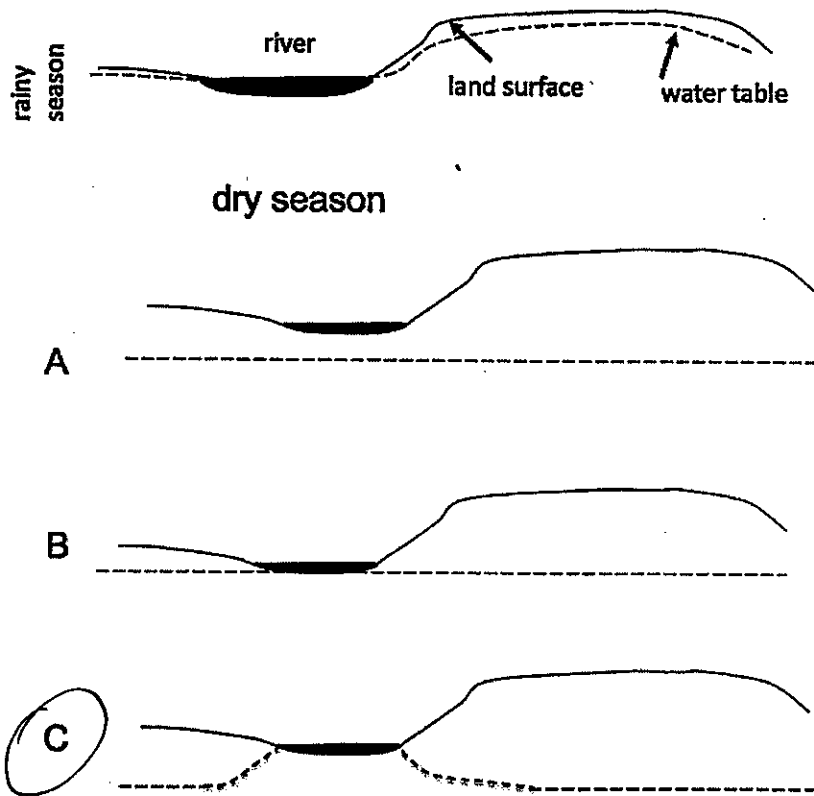
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

2

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
b. A = gravitational, B= gravitational, C= thermal
c. A = gravitational, B= thermal, C= thermal
d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?

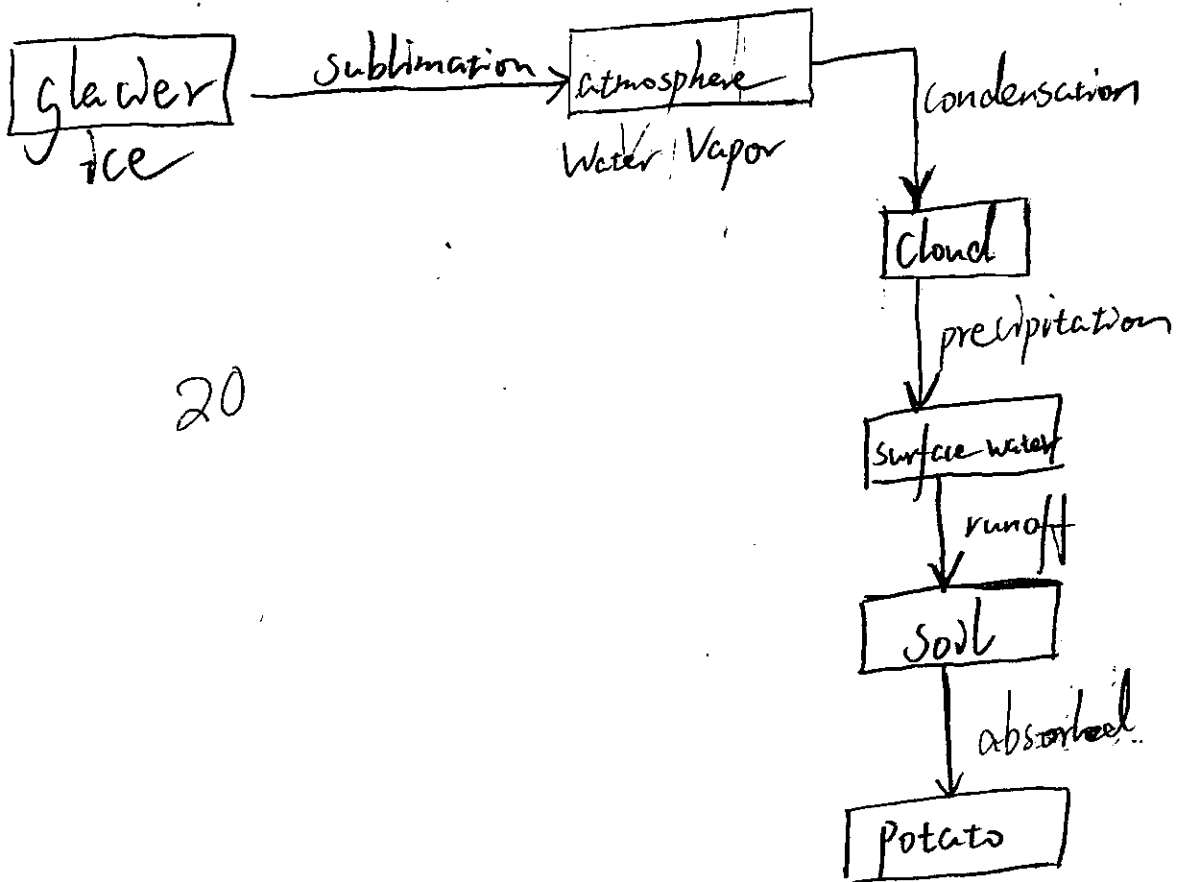


9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
b. been less
c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
b. Plants convert energy into biomass
c. Plants release energy

A43050270

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- Water phase at each step in the journey
 - A name for each process that moves or transforms water



2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- a. Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - b. The energy that is causing movement or transformation of water.

If polar ice contained more salt than the surrounding seawater, it means that salt water rises and fresh water sinks. So the density of salt water will be less than the density of freshwater. Thermohaline circulation in oceans would change to salt water sinking at top and fresh water sinks.

5

EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- a. They both destroy matter during energy conversion
- b. They both convert thermal energy into gravitational energy
- c. They both convert chemical energy into thermal energy
- d. They both convert kinetic energy into potential energy.

35 25

YOUR SCORE:

60

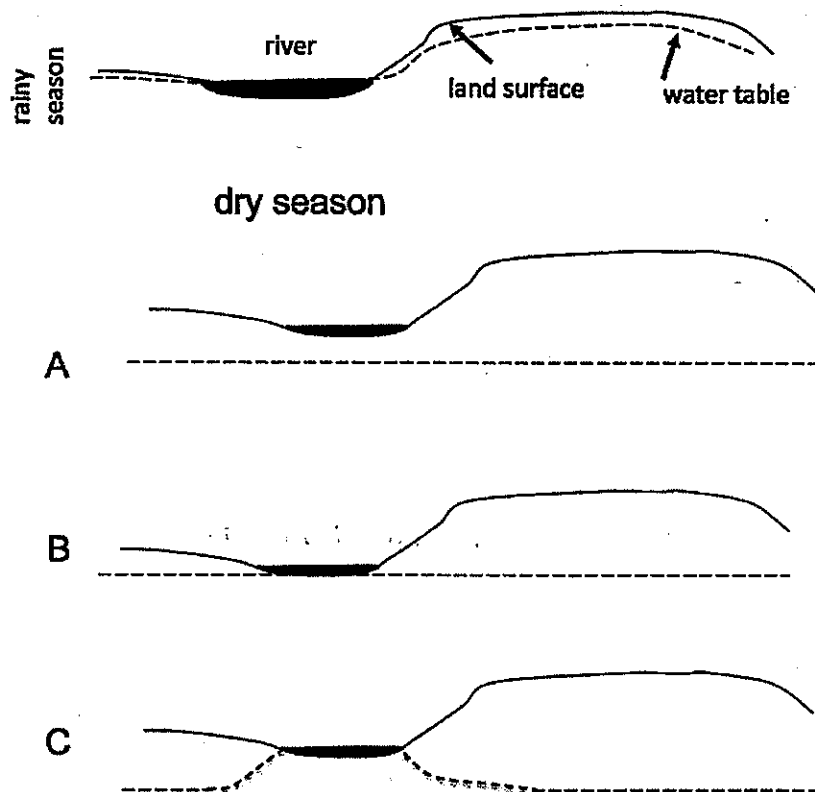
STUDENT ID #: A39474585; GROUP #: 23**MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.**

1. What happens when water molecules condense? 9
- Water molecules become larger
 - Gaseous water becomes liquid water
 - Hydrogen and oxygen atoms combine to form liquid water
 - The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
- The atmosphere
 - Oceans
 - Glaciers
 - Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
- Rainfall and surface runoff into the lake
 - Seasonal high water from the Mississippi River
 - Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of ____A____, then becomes water in a glacier through the process of ____B____, and then becomes water in clouds through the process of ____C____.
- A= evaporation, B= deposition, C= sublimation
 - A = condensation, B= precipitation, C= evaporation
 - A= sublimation, B= precipitation, C= evaporation
 - A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
- Liquid water from the pot condenses
 - Liquid water from the pot evaporates
 - Water vapor from the pot condenses
 - Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
- This is what one would predict with global warming
 - This is the opposite of what one would predict with global warming
 - Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
b. A = gravitational, B= gravitational, C= thermal
c. A = gravitational, B= thermal, C= thermal
d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?

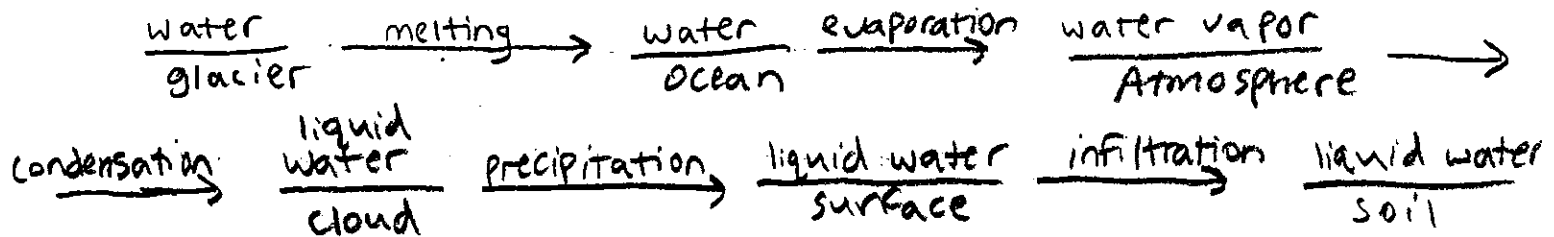


9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- been greater
 - been less
 - remained the same
10. What happens when plants respire?
- Plants convert biomass into energy
 - Plants convert energy into biomass
 - Plants release energy

A39474585

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- Water phase at each step in the journey
 - A name for each process that moves or transforms water



First the water needs to melt and become liquid water in the ocean. Next, the water must evaporate into the atmosphere as a gas, and condense to form a cloud. Then the water can precipitate onto the surface which could be a potato farm. The water can then infiltrate into the soil and be taken up by the potato roots.

25

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

15 a. Thermohaline circulation happens because warm water is less dense than cold water and because of buoyancy it floats on top of the cooler water. Cold water is more dense, so it sinks which is why it is the coldest at the bottom of the ocean. Thermohaline circulation relies on the cool arctic water for the process to take place. Thermal energy causes the polar ice to melt. Because the polar ice has more salt content, it is more dense than the surrounding sea water and therefore will sink. Warmer water from the equatorial regions will also bring heat to the polar regions causing the polar ice to melt. [If all of this polar ice were to melt, thermohaline circulation might cease entirely]

Water from glacier → warm water from equator melting → water (more dense) ocean

Salty polar water → sea water

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

45 42

YOUR SCORE:

87

A39732455

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

1

STUDENT ID #: A39732455; GROUP #: 23

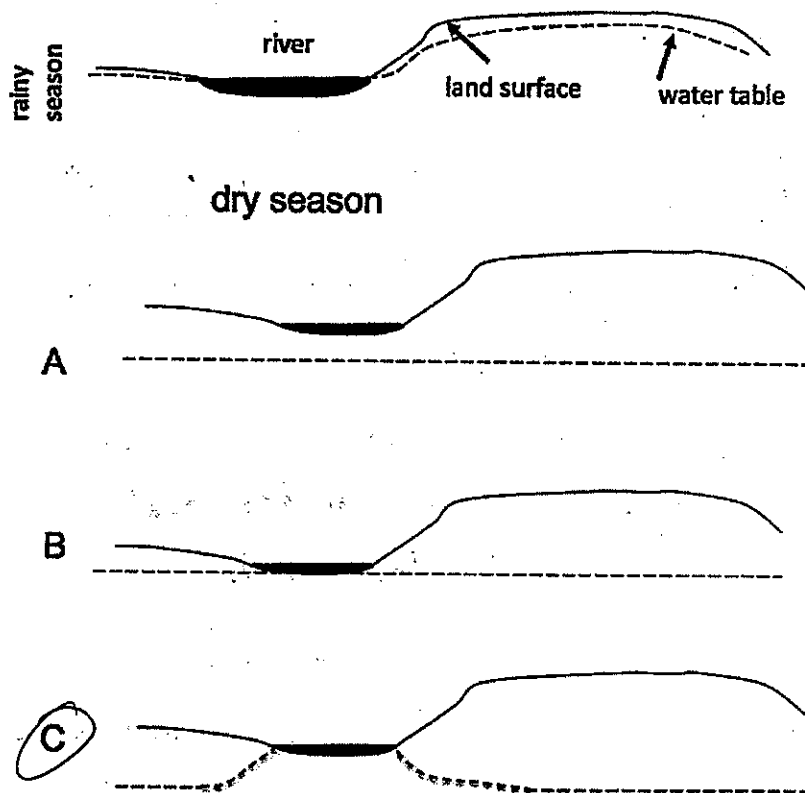
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 8
 - a. Water molecules become larger
 - ☒ b. Gaseous water becomes liquid water
 - c. Hydrogen and oxygen atoms combine to form liquid water
 - d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
 - a. The atmosphere
 - b. Oceans
 - ☒ c. Glaciers
 - d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
 - a. Rainfall and surface runoff into the lake
 - b. Seasonal high water from the Mississippi River
 - ☒ c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
 - a. A= evaporation, B= deposition, C= sublimation
 - ☒ b. A = condensation, B= precipitation, C= evaporation
 - c. A= sublimation, B= precipitation, C= evaporation
 - d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
 - a. Liquid water from the pot condenses
 - ☒ b. Liquid water from the pot evaporates
 - c. Water vapor from the pot condenses
 - d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
 - ☒ a. This is what one would predict with global warming
 - b. This is the opposite of what one would predict with global warming
 - c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
 — b. A = gravitational, B= gravitational, C= thermal
 — ☒ c. A = gravitational, B= thermal, C= thermal
 d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- ☒ a. been greater
 b. been less
 c. remained the same
10. What happens when plants respire?
- ☒ a. Plants convert biomass into energy
 b. Plants convert energy into biomass
 c. Plants release energy

A39732455

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

3

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- Water phase at each step in the journey
 - A name for each process that moves or transforms water

ice
glacier → Melting → liquid
ocean → evaporation → vapor
Atmosphere → circulation

→ vapor
atmosphere
above Idaho → Condensation → liquid
Cloud above
Idaho → precipitation

→ liquid
surface of
potato farm

water will fall into the ground due to gravity and be used by the potatoes to grow.

25

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water. *diff densities*

a. Circulation occurs in oceans because of the different densities of water in the ocean. It also occurs because of ocean temperature differences and currents. Water is warmer at the equator and rises to the surface. As it moves to the poles it becomes cooler and falls.

b. The energy that causes ^{equator} circulation of water is thermal, the sun directly heats low latitude water more. The composition of water also causes circulation, saltwater is more dense, therefore falls below freshwater.

If polar ice contained more salt than surrounding seawater, that would make it more dense, causing it to fall below the seawater. This would affect thermohaline circulation by increasing it because ice at the poles would sink.

20

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- ☐ They both destroy matter during energy conversion
- ☐ They both convert thermal energy into gravitational energy
- ☒ They both convert chemical energy into thermal energy
- ☐ They both convert kinetic energy into potential energy.

40 47

YOUR SCORE:

87

STUDENT ID #: A4176295; GROUP #: 24

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?

8

- a. Water molecules become larger
- ☒ b. Gaseous water becomes liquid water
- c. Hydrogen and oxygen atoms combine to form liquid water
- d. The temperature of water molecules decreases

water → ice
(slower)

2. Which of the following is the largest freshwater reservoir

- a. The atmosphere
- b. Oceans
- ☒ c. Glaciers
- d. Lakes and streams

3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?

- a. Rainfall and surface runoff into the lake
- b. Seasonal high water from the Mississippi River
- ☒ c. Ground water from beneath the surface

condensation

4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B and then becomes water in clouds through the process of C.

Precipitation

- a. A=evaporation, B=deposition, C=sublimation
- ☒ b. A=condensation, B=precipitation, C=evaporation
- c. A=sublimation, B=precipitation, C=evaporation
- d. A=precipitation, B=freezing, C=condensation

A - condensation
B -
C -

5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?

- a. Liquid water from the pot condenses
- b. Liquid water from the pot evaporates
- ☒ c. Water vapor from the pot condenses
- d. Water vapor from the pot evaporates

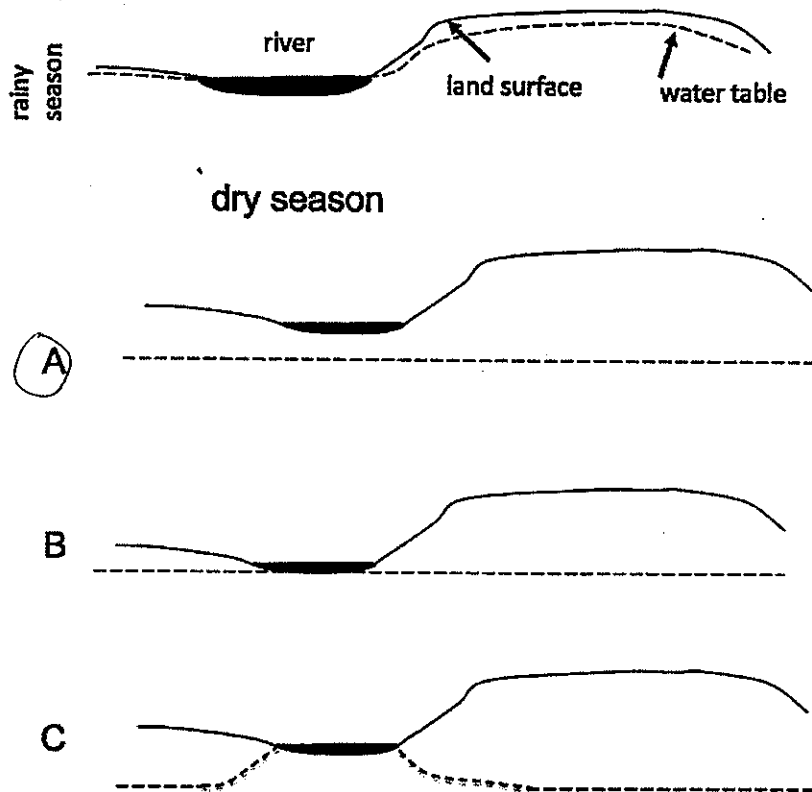
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?

- ☒ a. This is what one would predict with global warming
- b. This is the opposite of what one would predict with global warming
- c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
b. A = gravitational, B= gravitational, C= thermal
c. A = gravitational, B= thermal, C= thermal
d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



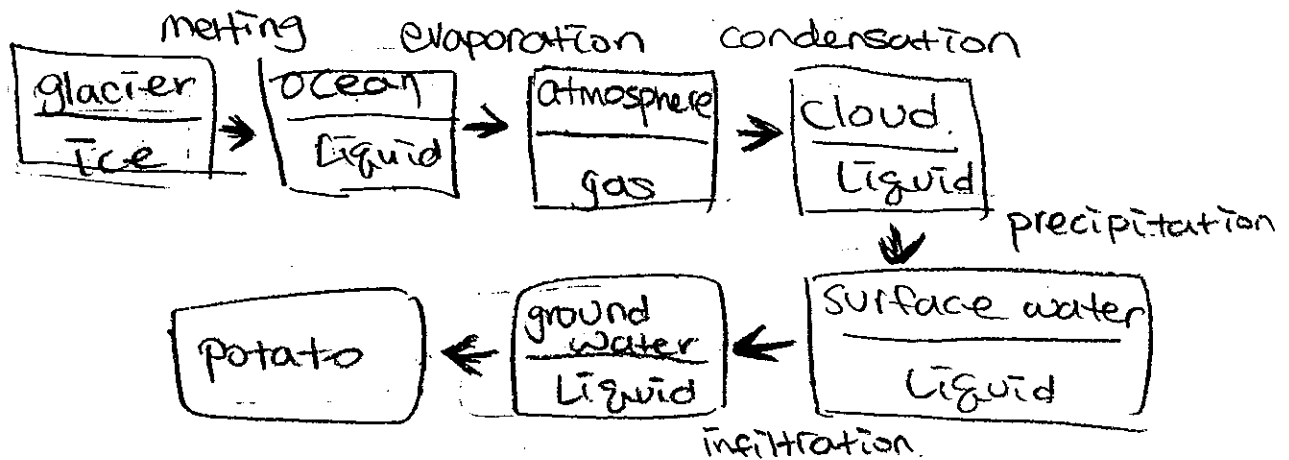
9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
b. been less
c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
b. Plants convert energy into biomass
c. Plants release energy

AU136895

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water



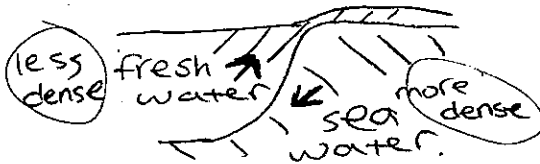
25

April 30 8:25

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

The ocean has thermohaline circulation because of difference of amount of salt and the temperature. If the water has high level of salt amount, it will have more dense than ~~of~~ less salt amount water.



if polar ice has more salt than the surrounding sea water, it will have more dense because of amount of salt. In my opinion, the polar ice will sink if it has more salt than surrounding.

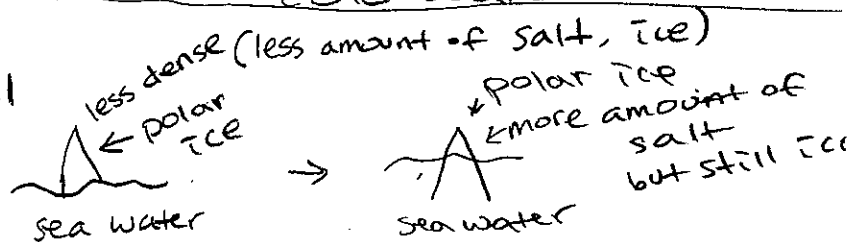
15

+

And also warm water has less density ~~of~~ than cold water. However the ice has less dense than water

Ice

get cold. Warm water
Cold water } get warm



EXTRA CREDIT (2 points)

XEC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

40 40

YOUR SCORE:

80

STUDENT ID #: A43091747; GROUP #: 24

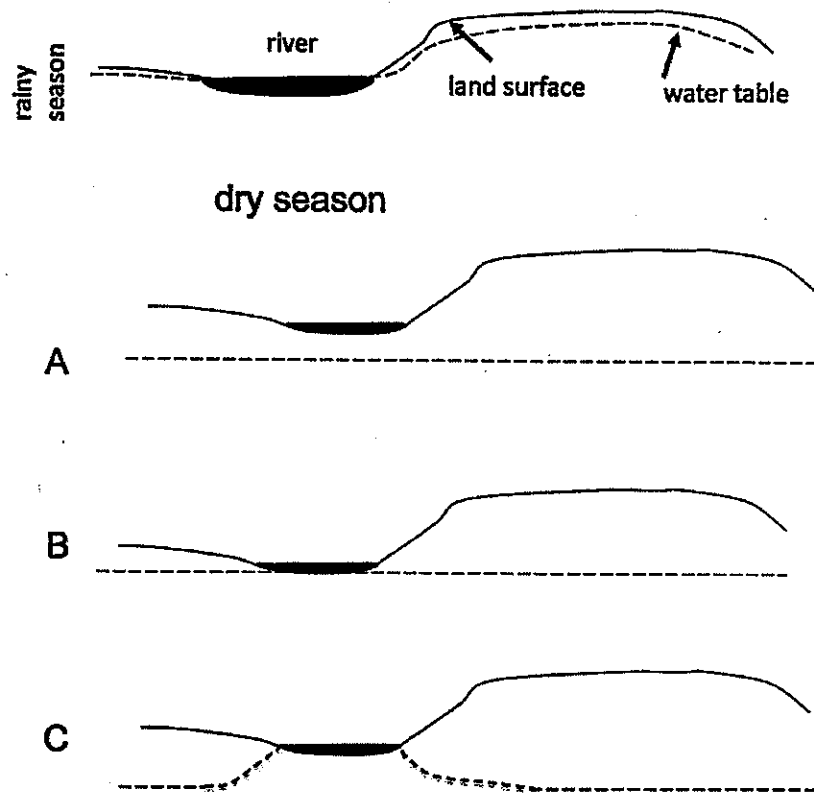
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?
a. Water molecules become larger
b. Gaseous water becomes liquid water
c. Hydrogen and oxygen atoms combine to form liquid water
d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
a. The atmosphere
b. Oceans
c. Glaciers
d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
a. Rainfall and surface runoff into the lake —
b. Seasonal high water from the Mississippi River
c. Ground water from beneath the surface —
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of ____A____, then becomes water in a glacier through the process of ____B____, and then becomes water in clouds through the process of ____C____.
a. A= evaporation, B= deposition, C= sublimation
b. A = condensation, B= precipitation, C= evaporation
c. A= sublimation, B= precipitation, C= evaporation
d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
a. Liquid water from the pot condenses
b. Liquid water from the pot evaporates
c. Water vapor from the pot condenses
d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
a. This is what one would predict with global warming
b. This is the opposite of what one would predict with global warming
c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
 b. A = gravitational, B= gravitational, C= thermal
 c. A = gravitational, B= thermal, C= thermal
 d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?

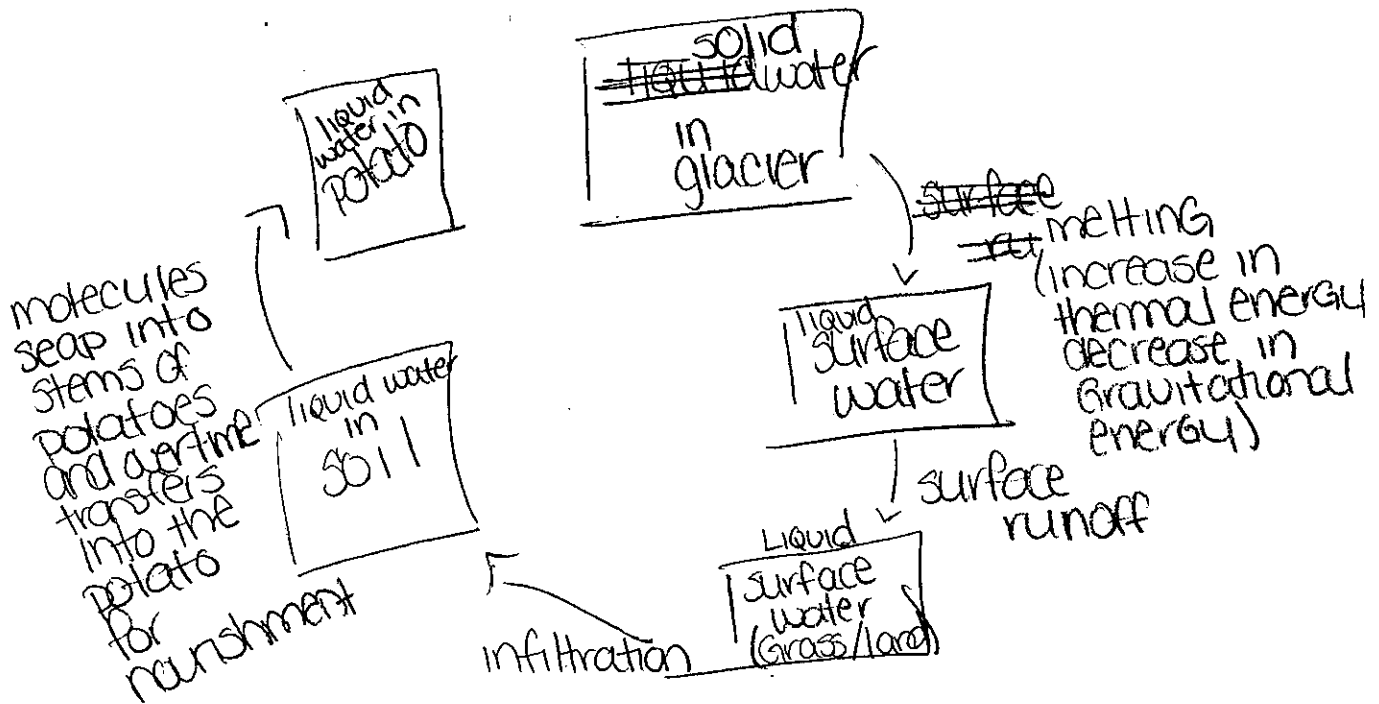


9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 b. been less
 c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 b. Plants convert energy into biomass
 c. Plants release energy

A43891747

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- Water phase at each step in the journey
 - A name for each process that moves or transforms water



Explanation:

25

~~solid~~ water in glacier melts and ends on surface as liquid. Surface runoff occurs and the water is transported to a grassy land where infiltration then occurs allowing the liquid water to go into the soil. As a farmer plants his potatoes, the water that is currently in the soil nourishes the potato and soon becomes a part of it.

AU3091747

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

4

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - The energy that is causing movement or transformation of water.

5

If ice contained more salt than the surrounding seawater from which it freezes, the ice's density would increase causing it to be more likely to sink. The salt could begin a chemical reaction with the ice causing it to melt quicker than it normally would do so. The process of water freezing to ice and back again would happen quicker.

EXTRA CREDIT (2 points)

- EC. How are burning wood and respiration similar?
- They both destroy matter during energy conversion
 - They both convert thermal energy into gravitational energy
 - They both convert chemical energy into thermal energy
 - They both convert kinetic energy into potential energy.

25 30

YOUR SCORE:

55

STUDENT ID #: A40208496; GROUP #: 24

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 9
a. Water molecules become larger
☒ b. Gaseous water becomes liquid water
c. Hydrogen and oxygen atoms combine to form liquid water
d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir?
a. The atmosphere
b. Oceans
☒ c. Glaciers
d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
a. Rainfall and surface runoff into the lake
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4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
a. A= evaporation, B= deposition, C= sublimation
☒ b. A = condensation, B= precipitation, C= evaporation
c. A= sublimation, B= precipitation, C= evaporation
d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
a. Liquid water from the pot condenses
☒ b. Liquid water from the pot evaporates
c. Water vapor from the pot condenses
d. Water vapor from the pot evaporates
liquid water evaporates creates water droplets or white cloud is the water vapor
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
☒ a. This is what one would predict with global warming
b. This is the opposite of what one would predict with global warming
c. Predictions about global warming do not address global precipitation.

A4208496

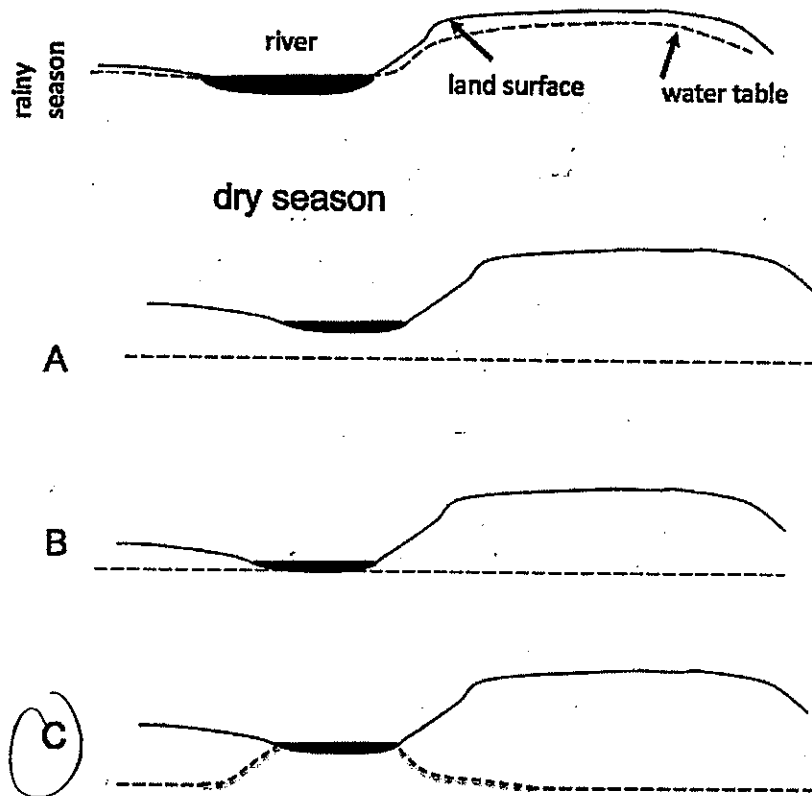
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

2

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
b. A = gravitational, B= gravitational, C= thermal
c. A = gravitational, B= thermal, C= thermal
d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?

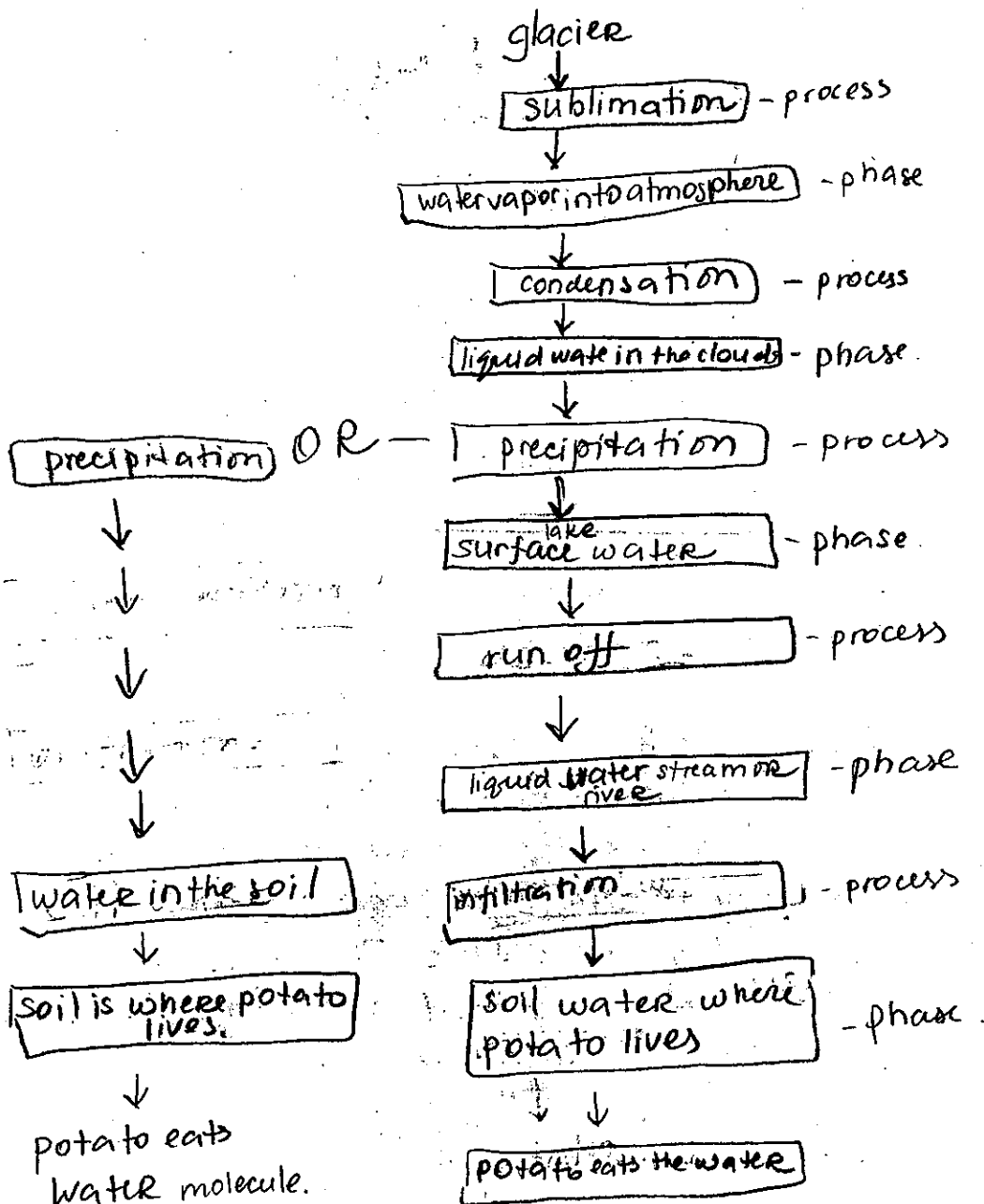


9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
b. been less
c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
b. Plants convert energy into biomass
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SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water



25

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- ✓ a. Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - ✓ b. The energy that is causing movement or transformation of water.

20

If polar ice contained more salt than the surrounding seawater the thermohaline circulation would change because the ice glaciers would have more salt → therefore have more density. And if the sea water would be losing too much salt it would be less dense. Even though the ~~ice~~ solid water has less density than liquid, the salted ice would sink to the bottom off the ocean, which now has less density; instead of floating on the water.

The circulation happens because of the global density gradients created by heat & fresh water fluxes. The circulation in the water in the polar regions comes from the equator, which is driven by the winds. The warm water is on the surface & cold water on the bottom, because it has bigger density. When circulation happens the heat is transferred to North Pole, where warm water on the surface & it freezes & becomes ice, with less saltiness. If that would change, the ice that would contain more salt would be on the bottom. So when circulation happens & the previously cold water that was driven to equator will not be moving to equator, because there is ice on the bottom of the ocean instead of cold water. The equatorial regions would become hotter now. The energy that is causing movement or transformation of water are chemical potential & thermal. Ocean circulation is driven by density differences by air masses, wind pushes water.

- EXTRA CREDIT (2 points) EC. How are burning wood and respiration similar? water phase, & thermal energy causes it freeze
- a. They both destroy matter during energy conversion
 - b. They both convert thermal energy into gravitational energy
 - c. They both convert chemical energy into thermal energy
 - d. They both convert kinetic energy into potential energy.

45 47

YOUR SCORE:

92

A

1

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

STUDENT ID #: A43767708 ; **GROUP #:** 25

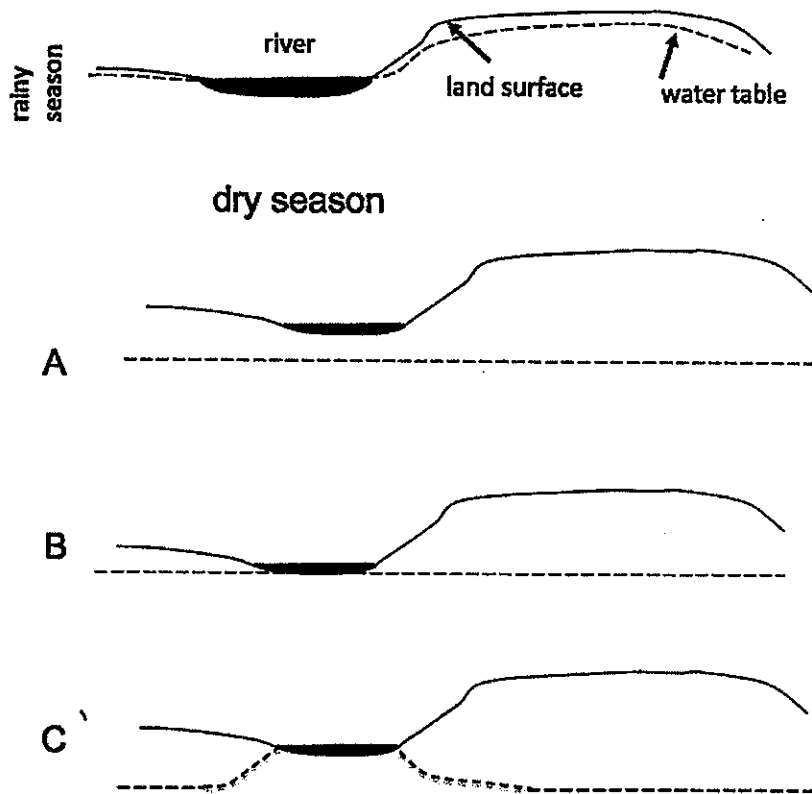
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 8
- Water molecules become larger
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2. Which of the following is the largest freshwater reservoir
- The atmosphere
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 - Glaciers
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3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
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4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
- A= evaporation, B= deposition, C= sublimation
 - A = condensation, B= precipitation, C= evaporation
 - A= sublimation, B= precipitation, C= evaporation
 - A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
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6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
- This is what one would predict with global warming
 - This is the opposite of what one would predict with global warming
 - Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?

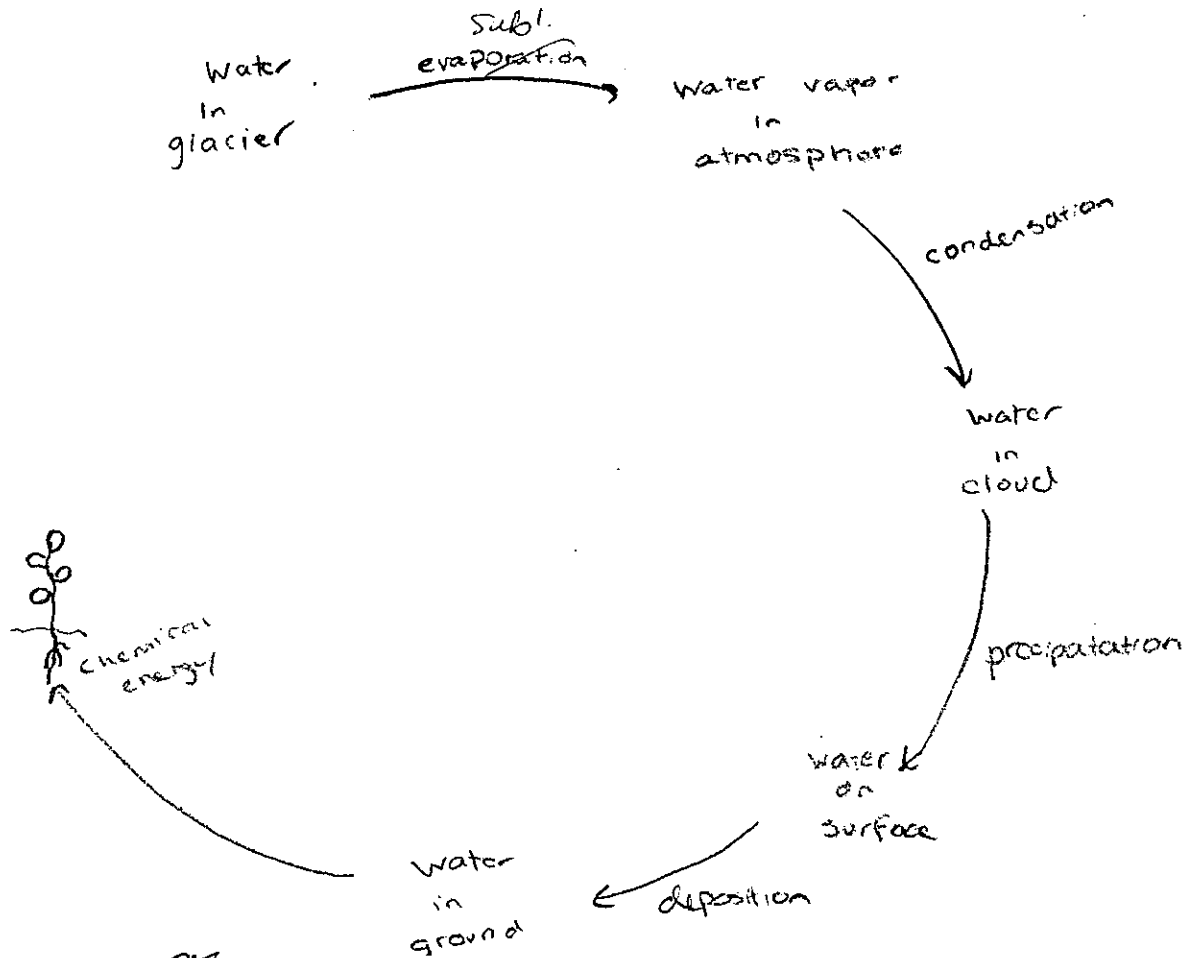


9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

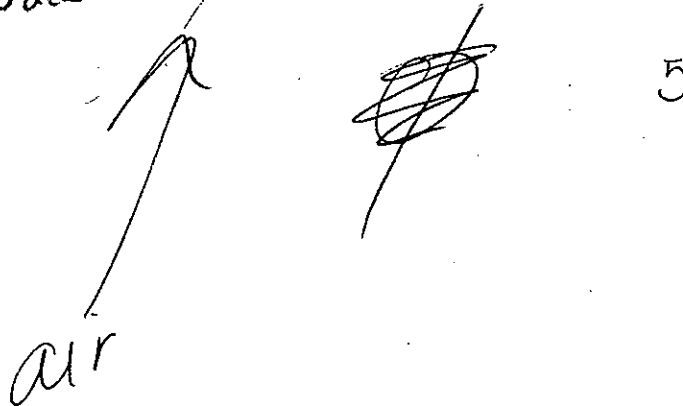
- Water phase at each step in the journey
- A name for each process that moves or transforms water



2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- OCEAN
- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - The energy that is causing movement or transformation of water.

Atmospheric circulation occurs because warmer water is less dense than colder water and air temperatures differ among latitudes. At the lower latitudes, warmer air would rise, and at higher latitudes colder air would sink. If the air had hotter temperatures the air would rise higher before it could actually sink. Warmer air would move faster towards the poles before it sinks. Therefore the Hadley circulation cell shows that from the equator, it's approx. 30 degrees N and S latitudes which reaches higher latitudes



~~EXTRA CREDIT (2 points)~~

EC: How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

45 10

YOUR SCORE:

55

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

1

STUDENT ID #: ~~XXXXXXXXXXXX~~; GROUP #: 26
39872700

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?

- ☐ a. Water molecules become larger
- ☒ b. Gaseous water becomes liquid water
- ☐ c. Hydrogen and oxygen atoms combine to form liquid water
- ☐ d. The temperature of water molecules decreases

condensation
vapor to liquid

6

2. Which of the following is the largest freshwater reservoir

- a. The atmosphere
- b. Oceans
- ☒ c. Glaciers
- d. Lakes and streams

3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?

- ☒ a. Rainfall and surface runoff into the lake
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- a. A= evaporation, B= deposition, C= sublimation
- ☒ b. A = condensation, B= precipitation, C= evaporation
- c. A= sublimation, B= precipitation, C= evaporation
- d. A = precipitation, B= freezing, C= condensation

5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?

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- b. Liquid water from the pot evaporates
- ☒ c. Water vapor from the pot condenses
- d. Water vapor from the pot evaporates

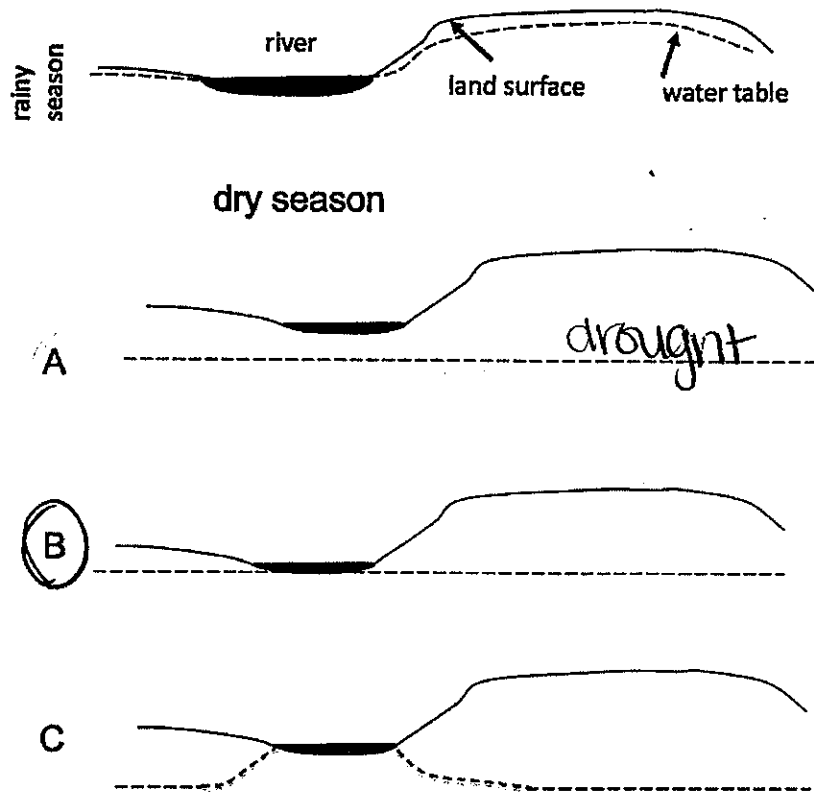
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?

- ☒ a. This is what one would predict with global warming
- b. This is the opposite of what one would predict with global warming
- c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
 b. A = gravitational, B= gravitational, C= thermal
 c. A = gravitational, B= thermal, C= thermal
 d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?

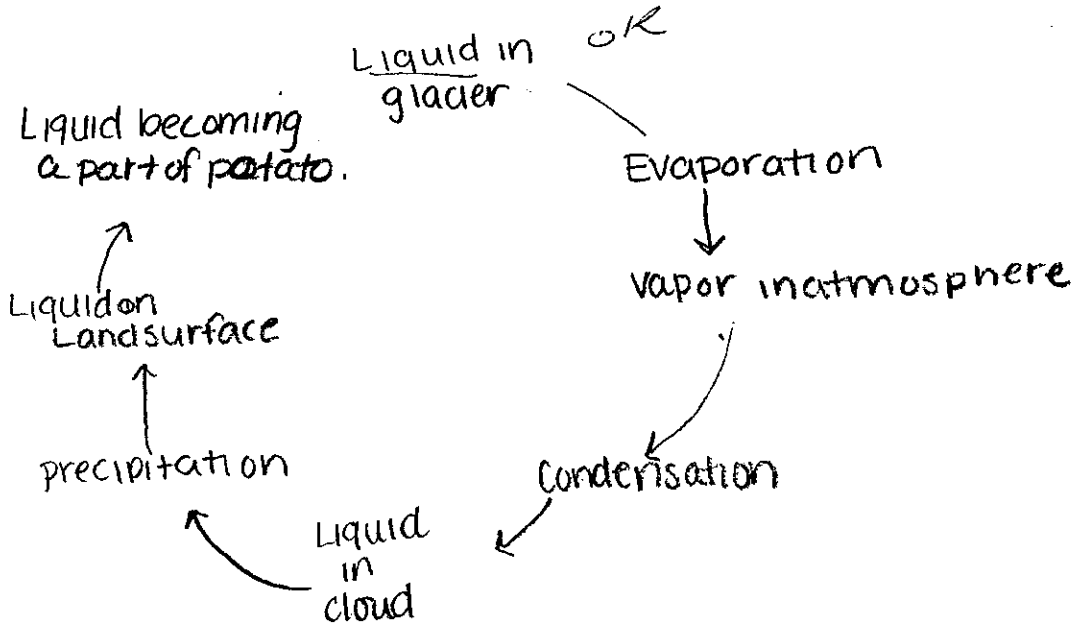


9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 b. been less
 c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 b. Plants convert energy into biomass
 c. Plants release energy

A39872700

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- a. Water phase at each step in the journey
 - b. A name for each process that moves or transforms water



25

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - The energy that is causing movement or transformation of water.

When salt (thermohaline) is added to a liquid the density increases. Therefore since the polar ice has a lower temperature the density is higher. Adding more salt to this equation would make the ice more dense than surrounding water. Ultimately the ice would PIOT SINK! as a result of the increased density as well as buoyancy. The Hadley circulation cell would increase in density. This is also occurring due to gravitational energy because of the circulation in the ocean being changed.

2

✗ EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

30 27


YOUR SCORE:

57

STUDENT ID #: A40850791; GROUP #: 26

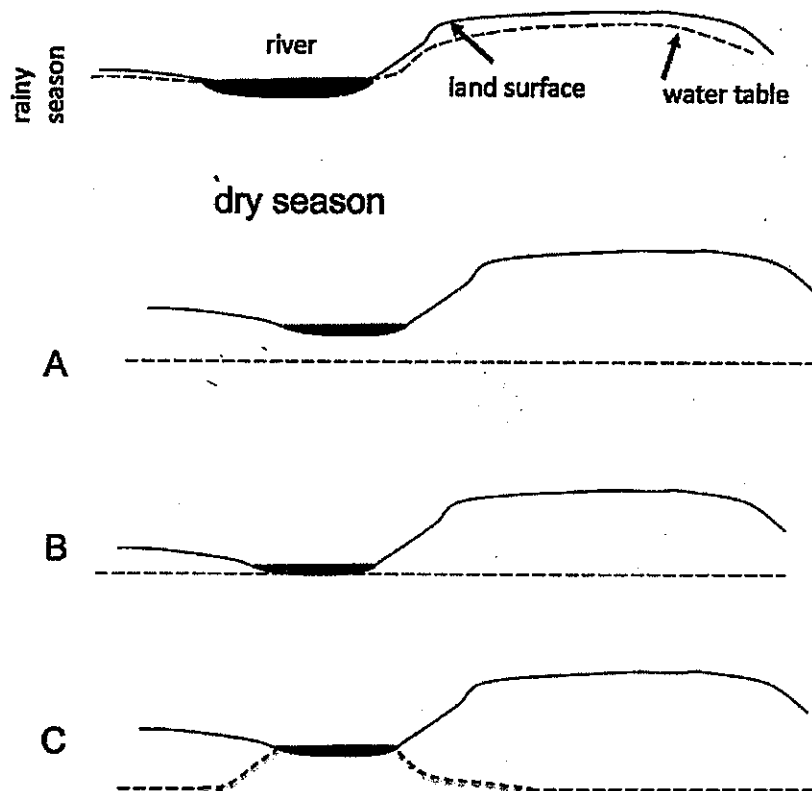
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?
a. Water molecules become larger
☒ b. Gaseous water becomes liquid water
c. Hydrogen and oxygen atoms combine to form liquid water
d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
a. The atmosphere
b. Oceans
c. Glaciers
d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
a. Rainfall and surface runoff into the lake
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c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
a. A= evaporation, B= deposition, C= sublimation
☒ b. A = condensation, B= precipitation, C= evaporation
c. A= sublimation, B= precipitation, C= evaporation
d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
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c. Water vapor from the pot condenses
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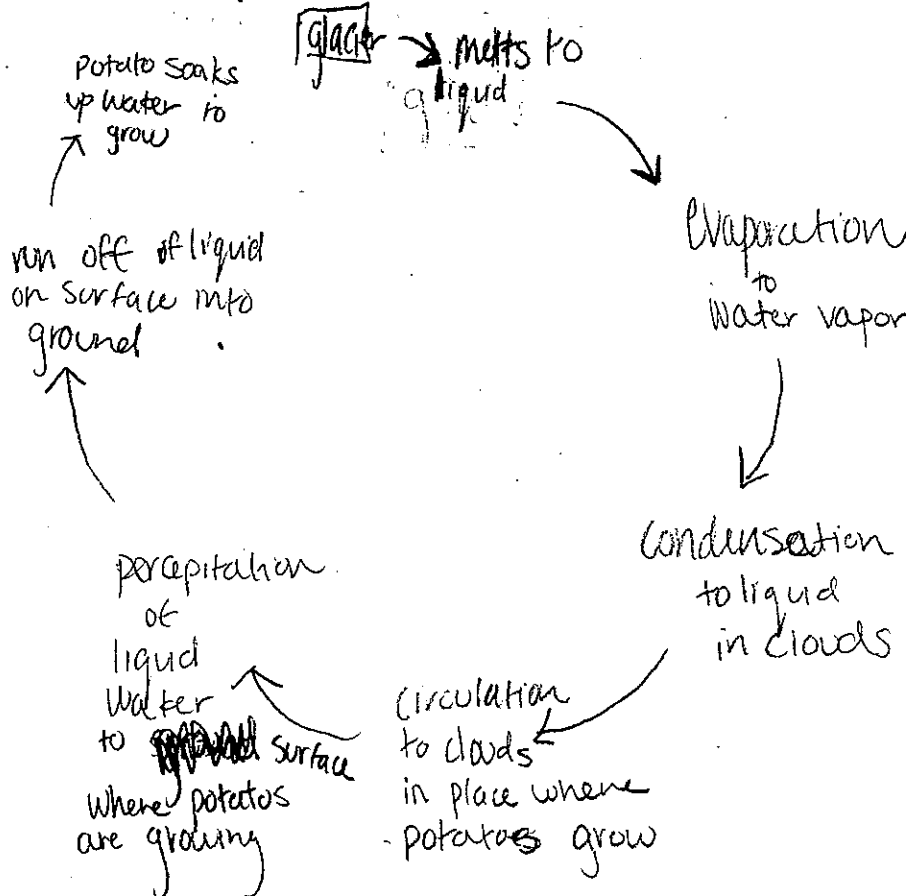


9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 - b. been less
 - c. remained the same
10. What happens when plants respire? -
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water



25

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- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - The energy that is causing movement or transformation of water.

In thermohaline circulation, salt water is more dense. Because it is more dense, it falls to the bottom pushing the freshwater which is less dense to the top. This exchange creates the circulation. If polar ice contained more salt than the surrounding seawater, thermohaline circulation would happen at a quicker rate because it would be more dense than before. This would be a slight change. The energy being used is chemical kinetic.

X EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

30 35

YOUR SCORE:

65

STUDENT ID #: A42707740; GROUP #: 26

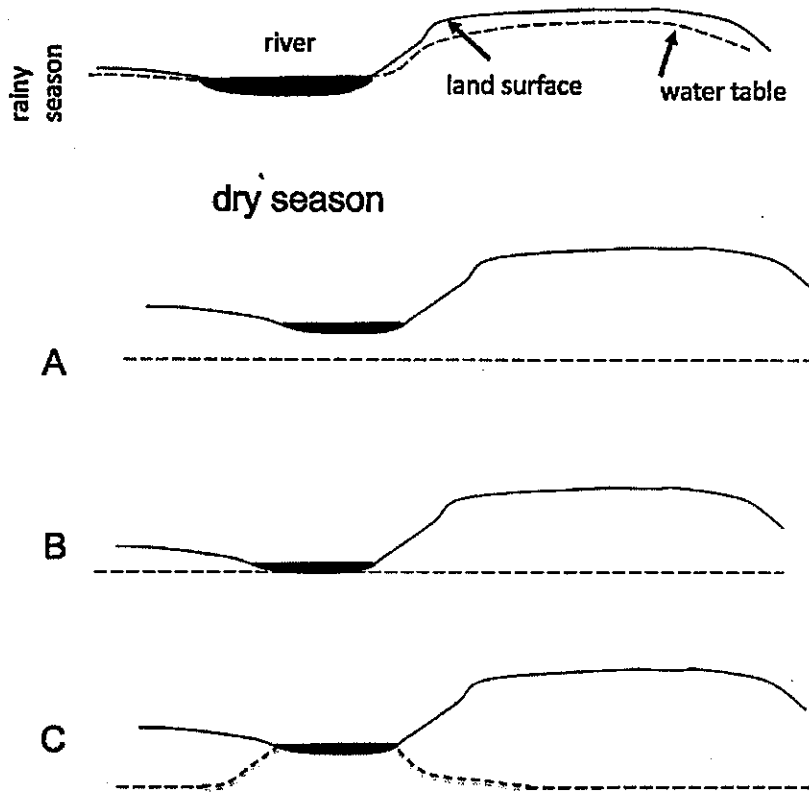
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 8
 - a. Water molecules become larger
 - b. Gaseous water becomes liquid water
 - c. Hydrogen and oxygen atoms combine to form liquid water
 - d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
 - a. The atmosphere
 - b. Oceans
 - c. Glaciers
 - d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
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 - c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
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7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

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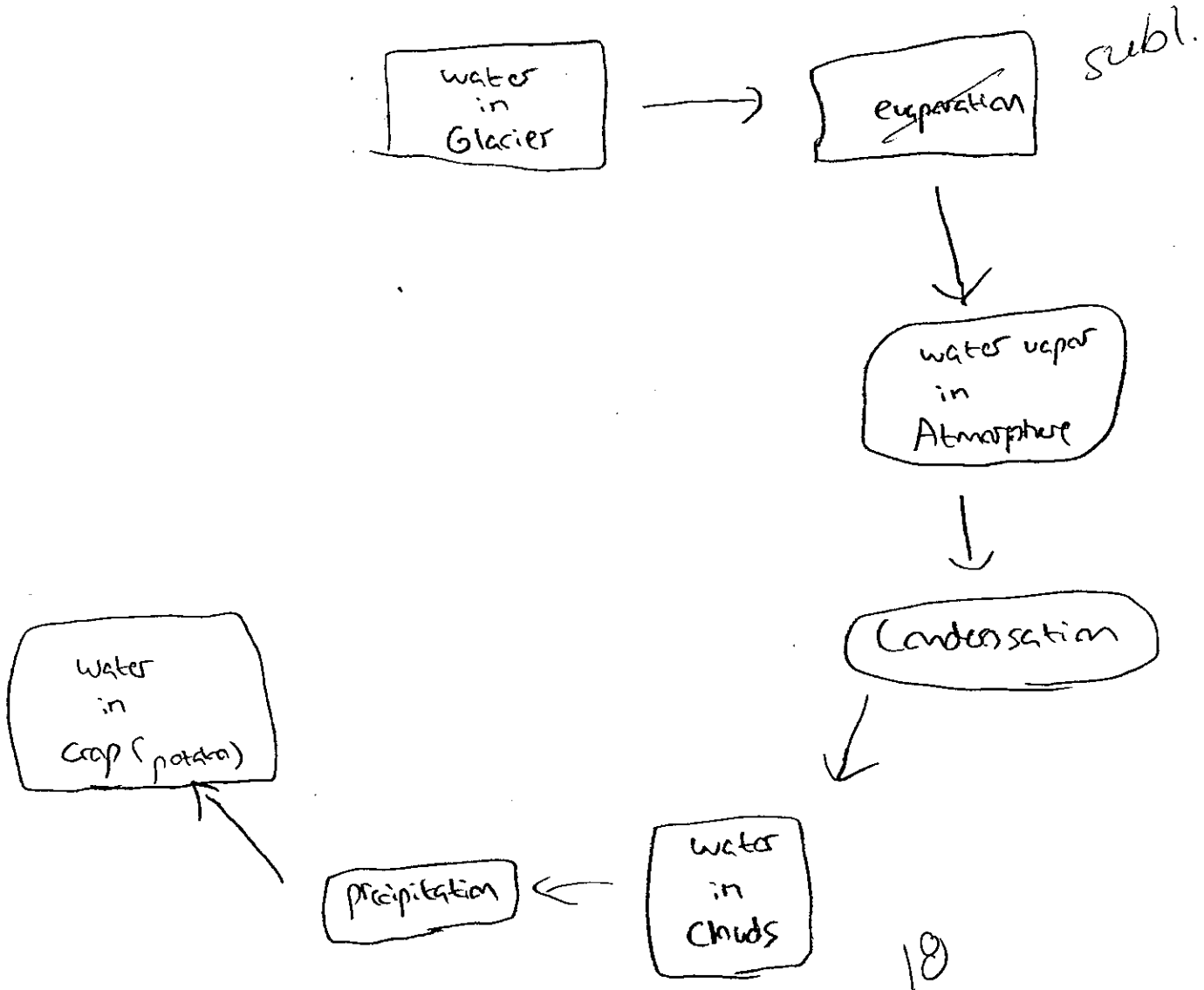


9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
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 - b. been less
 - c. remained the same
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- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
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(Convection)
Circulation occurs due to the density and porosity?
of warm/cold, salty/not salty water. Warm water from the equator heads towards the poles on the upper surface, while cooler water travels the lower half from the poles back to the equator. Movement is due to wind currents and density driven forces.
If there were less salt in ice when it froze this would mean there would be an increase in salt of the sea water. In turn, this would not change thermohaline circulation too much because the density of the salt would be distributed evenly whereas the temperatures would not be affected, which drives the under and over circulation of the ocean as well as wind and other density driven forces.

20

- 2 EXTRA CREDIT (2 points)
EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- ☒ They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

40 40

YOUR SCORE:

80

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

1

STUDENT ID #: A42003289; GROUP #: 26

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?

10

- a. Water molecules become larger
- b. Gaseous water becomes liquid water
- c. Hydrogen and oxygen atoms combine to form liquid water
- d. The temperature of water molecules decreases

2. Which of the following is the largest freshwater reservoir

- a. The atmosphere
- b. Oceans
- c. Glaciers
- d. Lakes and streams

3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?

- a. Rainfall and surface runoff into the lake
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4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.

- a. A= evaporation, B= deposition, C= sublimation
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6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?

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A42003289

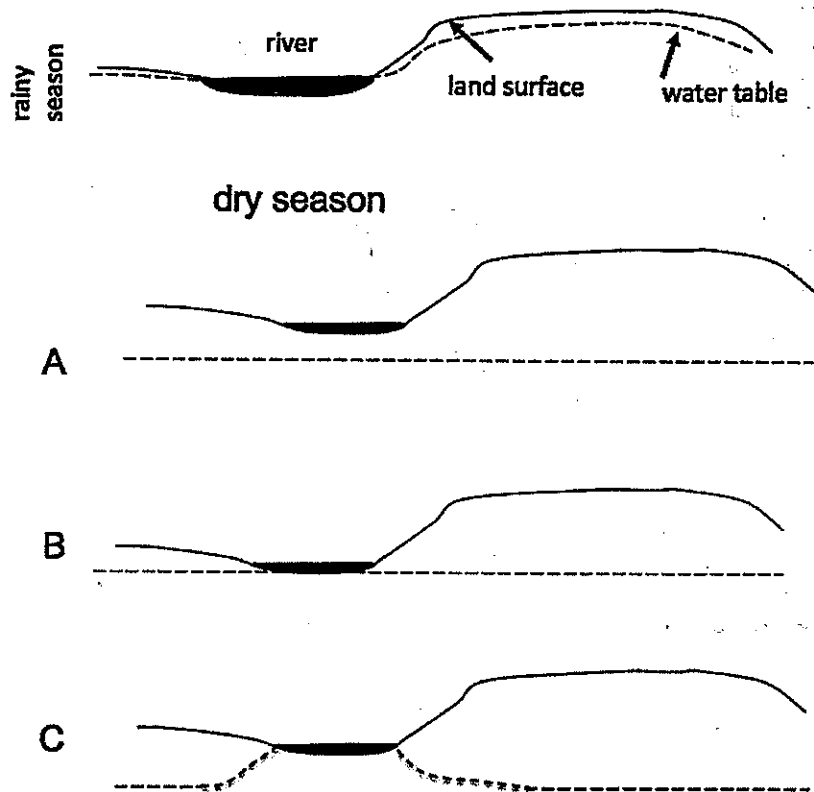
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

2

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A = chemical, B = thermal, C = thermal
- b. A = gravitational, B = gravitational, C = thermal
- c. A = gravitational, B = thermal, C = thermal
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9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 - b. been less
 - c. remained the same
- density of ice = 0.9 g/cc
density of water = 1 g/cc

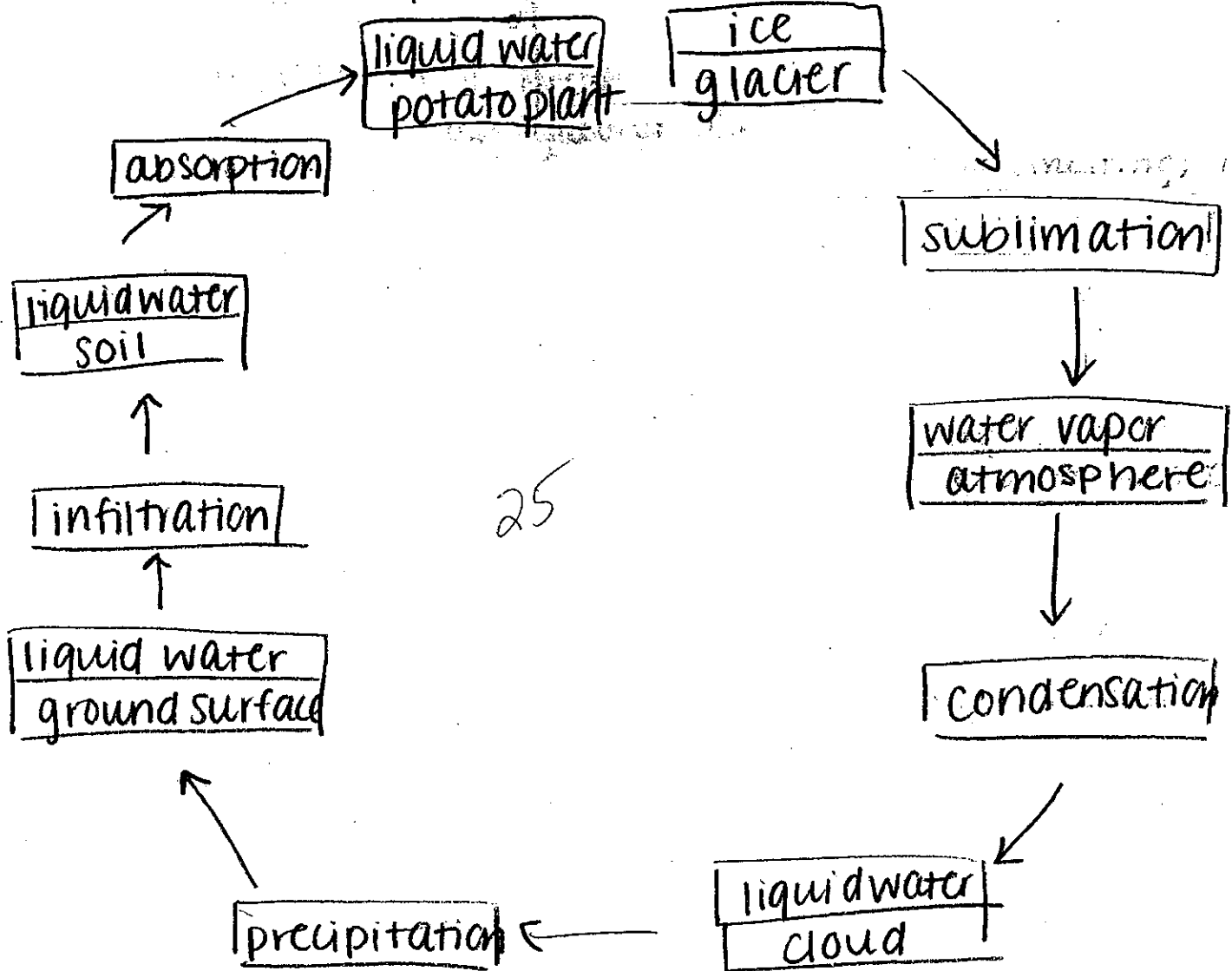
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

A42003289

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

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Saltwater is more dense than freshwater. If polar ice contained more salt than the surrounding seawater from which it freezes, then the ice would not float because bouancy would make the ice sink from a result of both gravitational and thermal energy. Because thermohaline circulation causes there to be a warmer water flow to the poles, this would be disrupted. The ice would sink, providing no opportunity for it to melt. Warmer water would still be at the surface, but ice and colder water would be at the bottom. Instead of circulating, the water would remain stagnant. ✓

25

2

EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

50 52

YOUR SCORE:

102 ? 4

A 42704999

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

1

STUDENT ID #: A42704999; GROUP #: 27

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?

- a. Water molecules become larger
- ☒ b. Gaseous water becomes liquid water
- c. Hydrogen and oxygen atoms combine to form liquid water
- d. The temperature of water molecules decreases

6

2. Which of the following is the largest freshwater reservoir

- ~~a.~~ The atmosphere
- b. Oceans
- c. Glaciers
- ☒ d. Lakes and streams

3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?

- ☒ a. Rainfall and surface runoff into the lake
- ~~b.~~ Seasonal high water from the Mississippi River
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4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of _____ A _____, then becomes water in a glacier through the process of _____ B _____, and then becomes water in clouds through the process of _____ C _____.

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A42704999

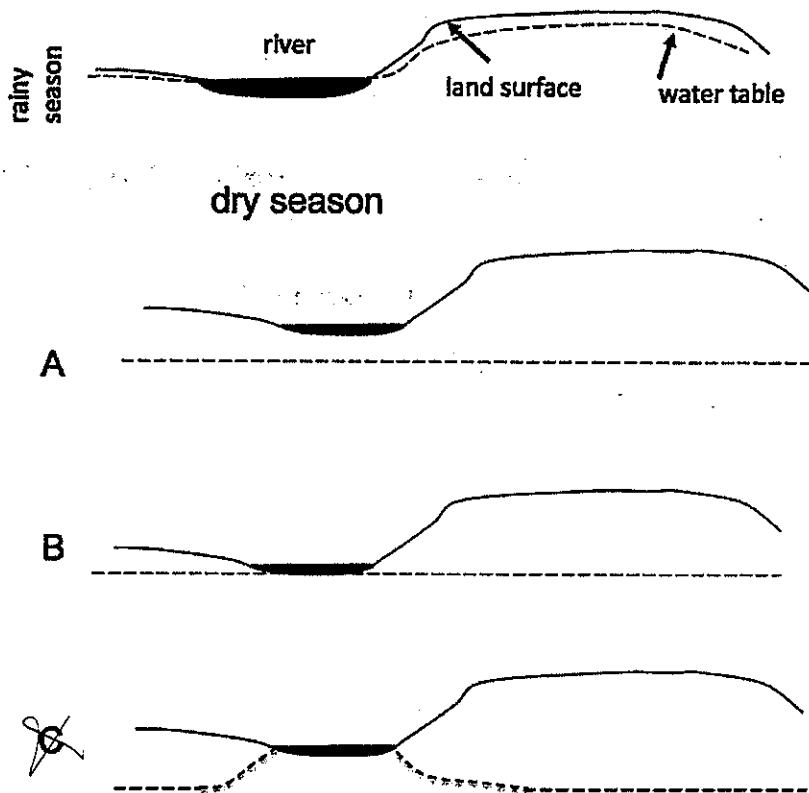
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

2

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

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9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
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- a. Plants convert biomass into energy
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SHORT ANSWER. 25 points each (50 points total)

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Glacier
solid Sublimation Atmosphere
Gas Condensation Cloud
liquid Precipitation
surface
liquid infiltration Soil
liquid the water will then be absorbed
by the roots in the plants

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

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Energy → Gravitational potential
Gravitational kinetic
Thermal Chemical

Circulation occurs because of the temperature differences in the water and because of the salt in the water. If water were to freeze (thermal/chemical energy) with more salt in the ice than in the water, circulation would halt. This is because thermohaline circulation uses salt as a driving force. If there is no salt in the water, the drive will discontinue and the temperature of the oceans would be affected.

There would no longer be cool water going to the equator, or warm water going to the poles, causing extreme temperatures in both regions.

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- c. They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

30 42

YOUR SCORE:

72

STUDENT ID #: A42669614 ; GROUP #: 27

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?

- a. Water molecules become larger
- ☒ b. Gaseous water becomes liquid water
- c. Hydrogen and oxygen atoms combine to form liquid water
- d. The temperature of water molecules decreases

7

2. Which of the following is the largest freshwater reservoir

- a. The atmosphere
- b. Oceans
- ☒ c. Glaciers
- d. Lakes and streams

3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?

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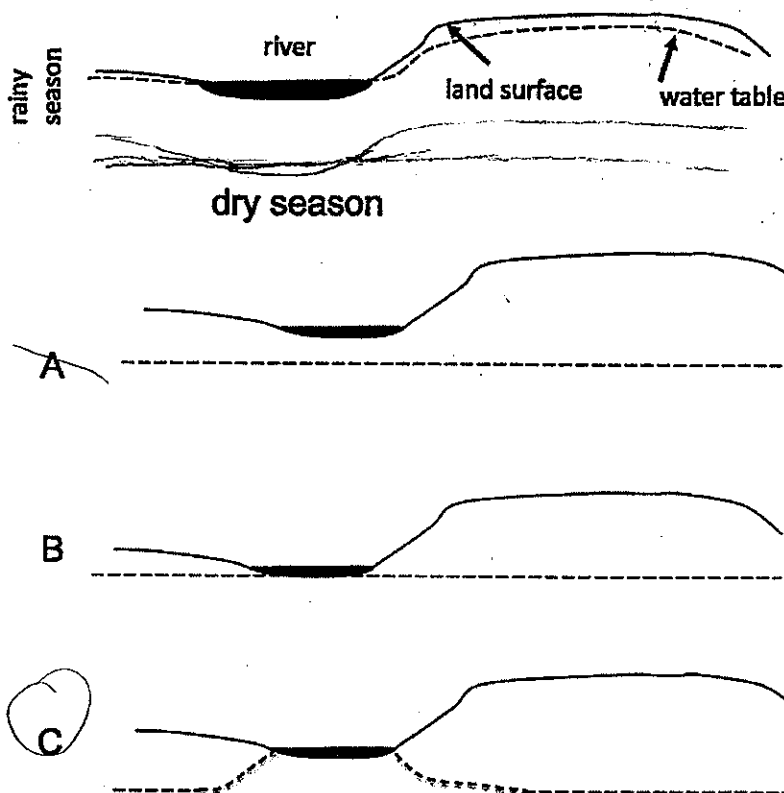
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- a. been greater
b. been less
c. remained the same

ice < water
if ice > water
rise?

10. What happens when plants respire?

- a. Plants convert biomass into energy
b. Plants convert energy into biomass
c. Plants release energy

A42669614

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

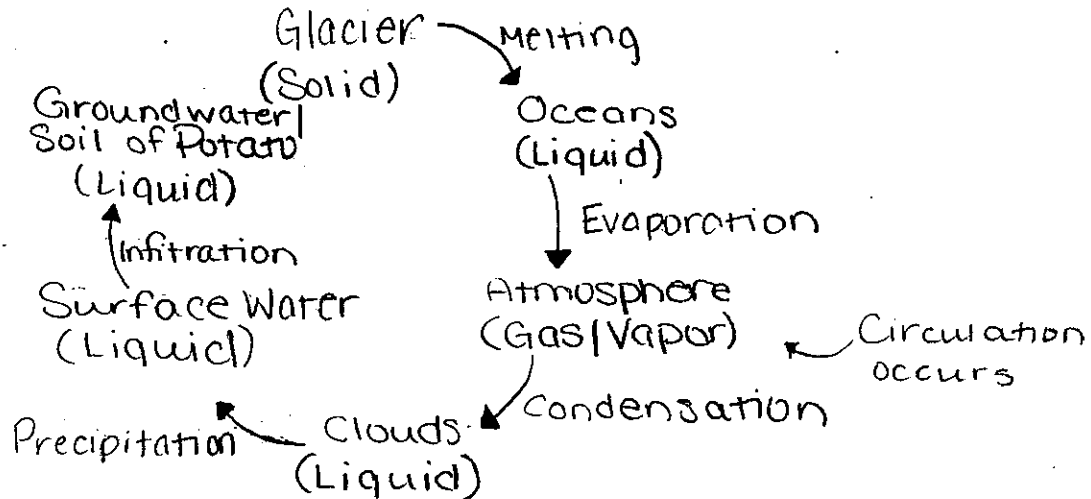
3

SHORT ANSWER. 25 points each (50 points total)

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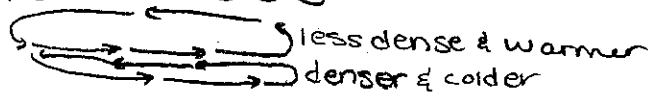
Glacier → Potato



25

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
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in seawater
Circulation happens because of temperature and density (salinity). The more salt it has, the more dense and therefore circulates towards the bottom of the seawater.



In oceans density places a larger role in the circulation of water than temperature so with more salt the circulation would change, explain

EXTRA CREDIT (2 points)

- EC. How are burning wood and respiration similar?
- They both destroy matter during energy conversion
 - They both convert thermal energy into gravitational energy
 - They both convert chemical energy into thermal energy
 - They both convert kinetic energy into potential energy.

35 37

YOUR SCORE:

72

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

1

STUDENT ID #: A424222222; GROUP #: 27

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?

7

- a. Water molecules become larger
- ☒ b. Gaseous water becomes liquid water
- c. Hydrogen and oxygen atoms combine to form liquid water
- ☐ d. The temperature of water molecules decreases

2. Which of the following is the largest freshwater reservoir

- a. The atmosphere
- b. Oceans
- c. Glaciers
- ☒ d. Lakes and streams

3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?

- a. Rainfall and surface runoff into the lake
- b. Seasonal high water from the Mississippi River
- ☒ c. Ground water from beneath the surface

4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.

- a. A= evaporation, B= deposition, C= sublimation
- ☒ b. A = condensation, B= precipitation, C= evaporation
- c. A= sublimation, B= precipitation, C= evaporation
- d. A = precipitation, B= freezing, C= condensation

5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?

- a. Liquid water from the pot condenses
- b. Liquid water from the pot evaporates
- ☒ c. Water vapor from the pot condenses
- d. Water vapor from the pot evaporates

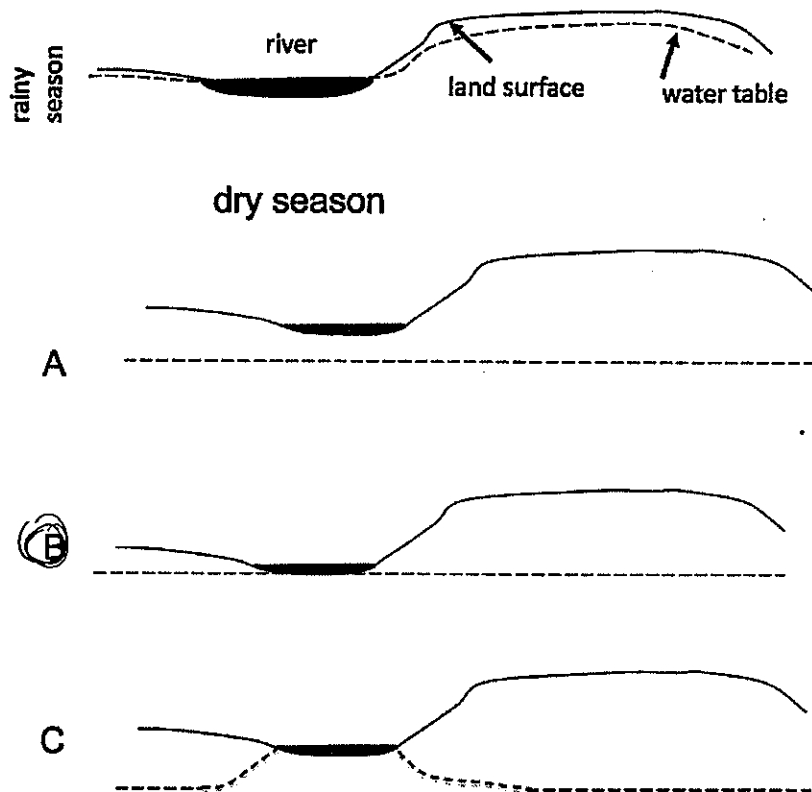
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?

- ☒ a. This is what one would predict with global warming
- b. This is the opposite of what one would predict with global warming
- c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
b. A = gravitational, B= gravitational, C= thermal
© A = gravitational, B= thermal, C= thermal
d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- Ⓐ been greater
b. been less
c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
b. Plants convert energy into biomass
© Plants release energy

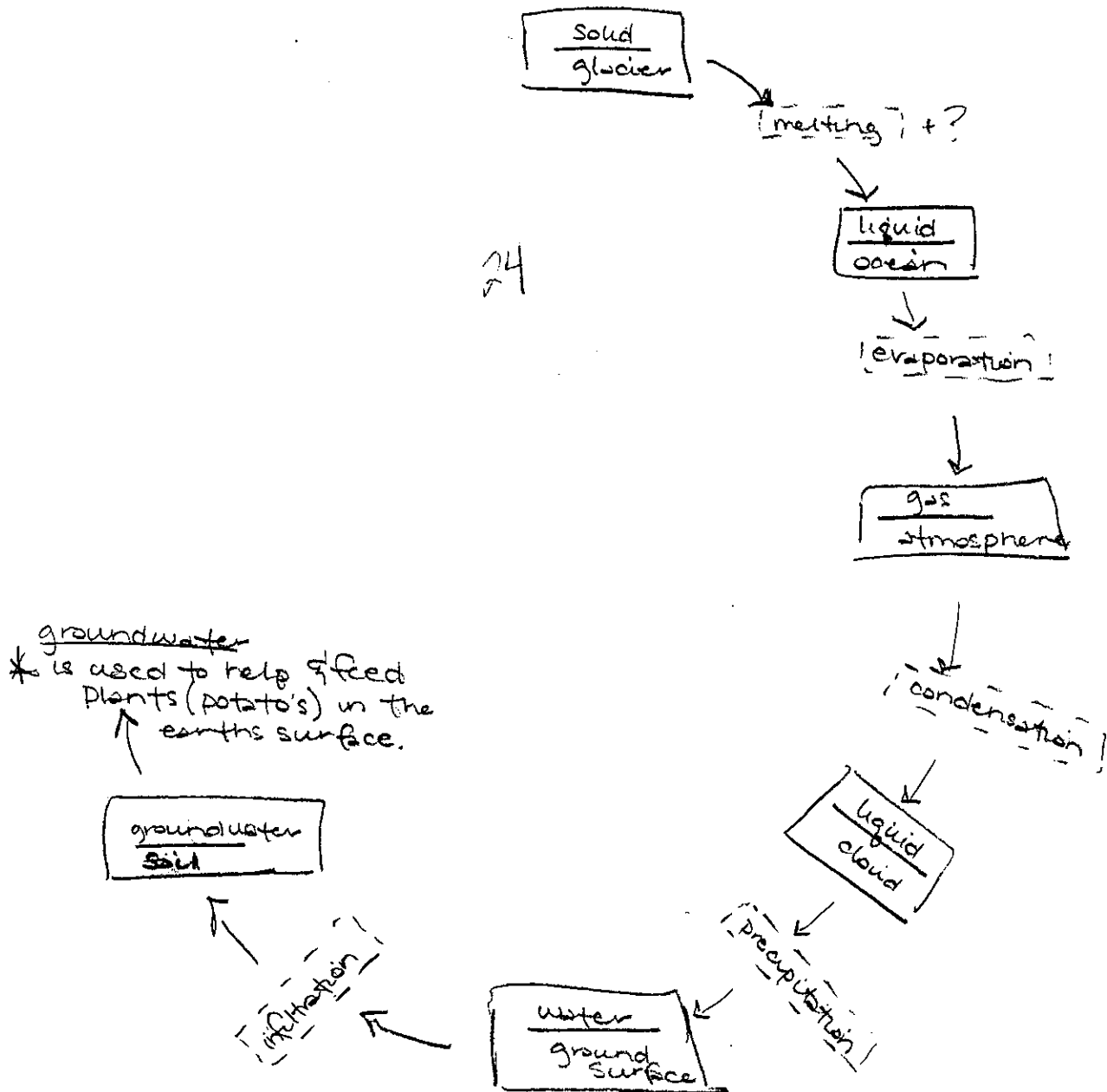
A42422266

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

3

SHORT ANSWER. 25 points each (50 points total)

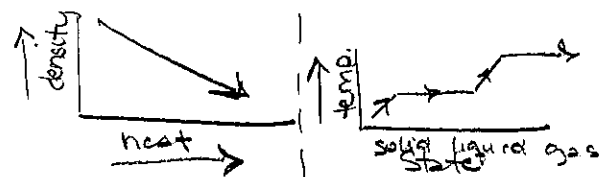
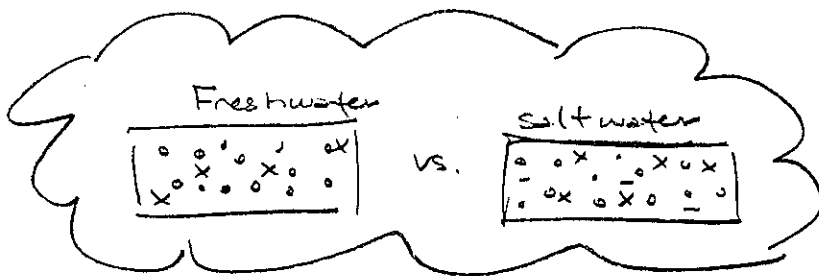
1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- Water phase at each step in the journey
 - A name for each process that moves or transforms water



2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

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- The energy that is causing movement or transformation of water.

Ice contains less salt than the remaining salt water because salt water holds more ions. In changing from a liquid to solid, the ions form bonds changing the salt water to a less dense, and more fresh water. Also with the salt water, it holds a much ^{hi} lower density meaning fresh water has a ^{low} higher density and there for when becoming a solid, the (ion bonds) are often left out/dropped to remain in the water leaving the glacier less dense with less salt than the water surrounding it allowing it to float.



EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- ☒ They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

35 30

YOUR SCORE:

65

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

1

STUDENT ID #: A40967142 ; **GROUP #:** 27

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

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6

- ☒ a. Water molecules become larger
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A40967142

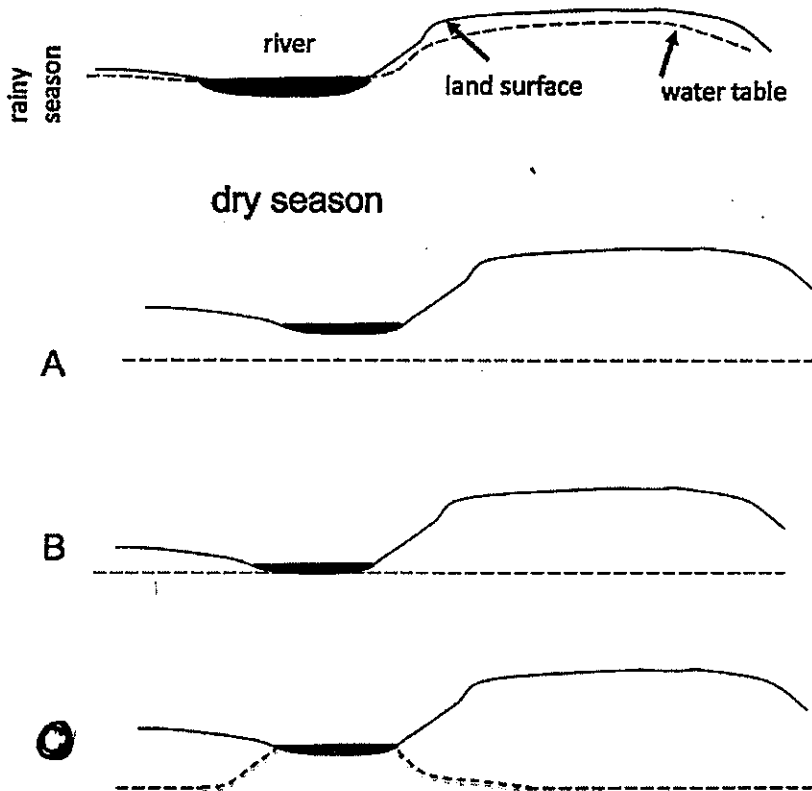
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

2

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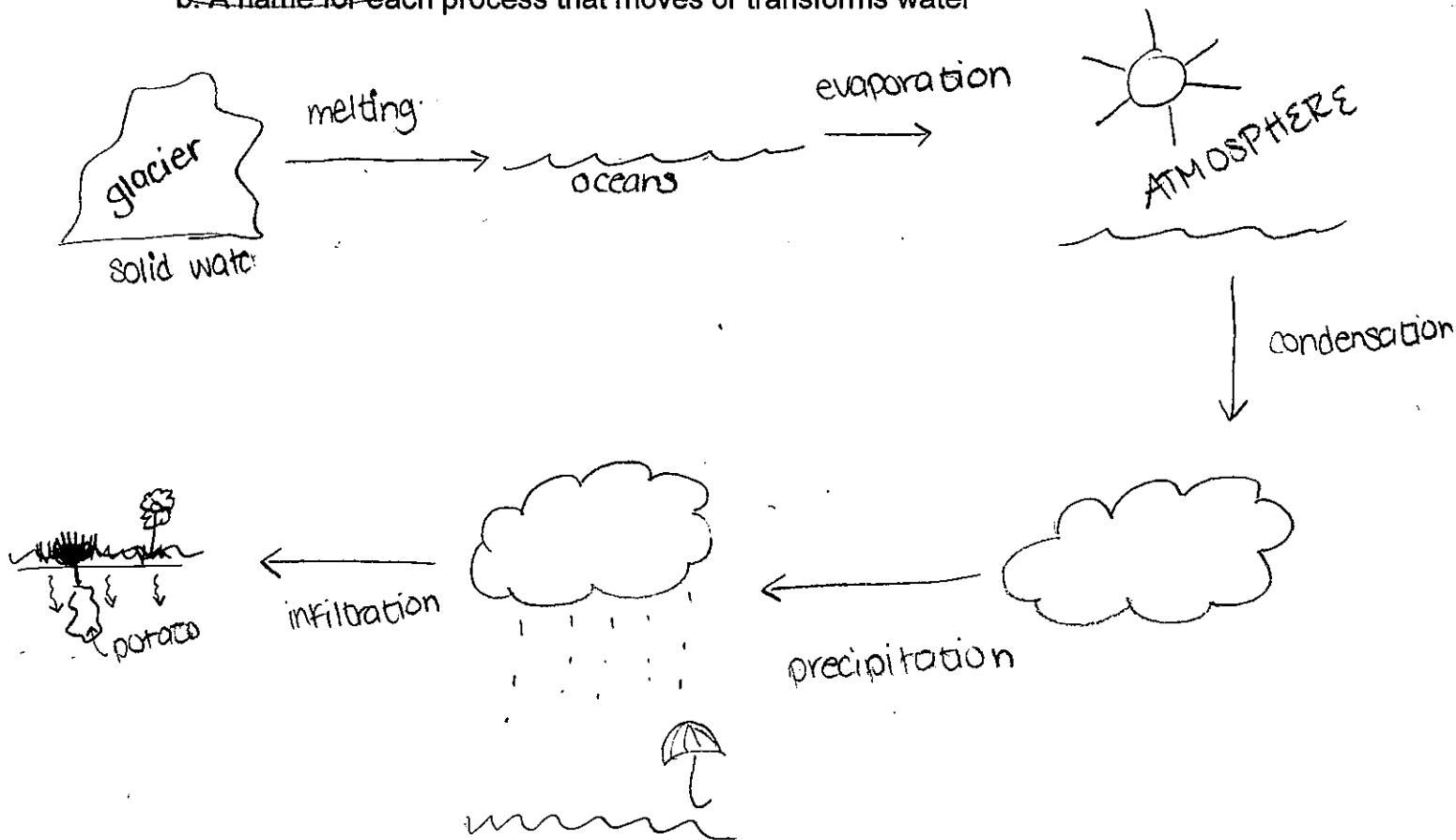


9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
☒ b. been less
c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
b. Plants convert energy into biomass
c. Plants release energy

SHORT ANSWER. 25 points each (50 points total)

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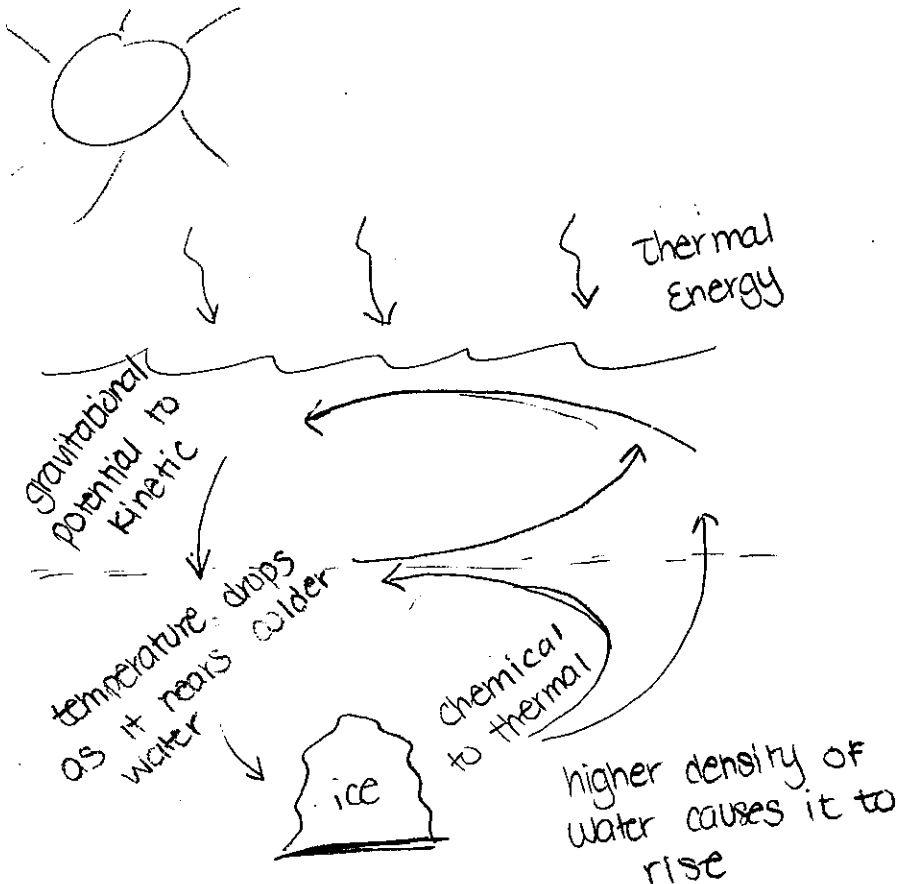
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- A name for each process that moves or transforms water



2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

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circulation occurs because temperature is a measure of the movement of molecules and as molecules move faster, density increases (except in water) and matter will move & change to return a system to equilibrium. Therefore, as water changes temperature, density changes (along w/ buoyancy) and in order to keep the system at equilibrium, the oceans circulate.



Warm water will sit on top. Heat from atmosphere will reach some cooler water. Some will rise due to buoyancy.

if ice was more dense than water, cool water would rise.
OK ...

~~23~~ 25

EXTRA CREDIT (2 points)

- 2 EC. How are burning wood and respiration similar?
- They both destroy matter during energy conversion
 - They both convert thermal energy into gravitational energy
 - They both convert chemical energy into thermal energy
 - They both convert kinetic energy into potential energy.

30 47
YOUR SCORE:
77

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

1

STUDENT ID #: 141930966; GROUP #: 28

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?

8

- a. Water molecules become larger
- b. Gaseous water becomes liquid water
- c. Hydrogen and oxygen atoms combine to form liquid water
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2. Which of the following is the largest freshwater reservoir

- a. The atmosphere
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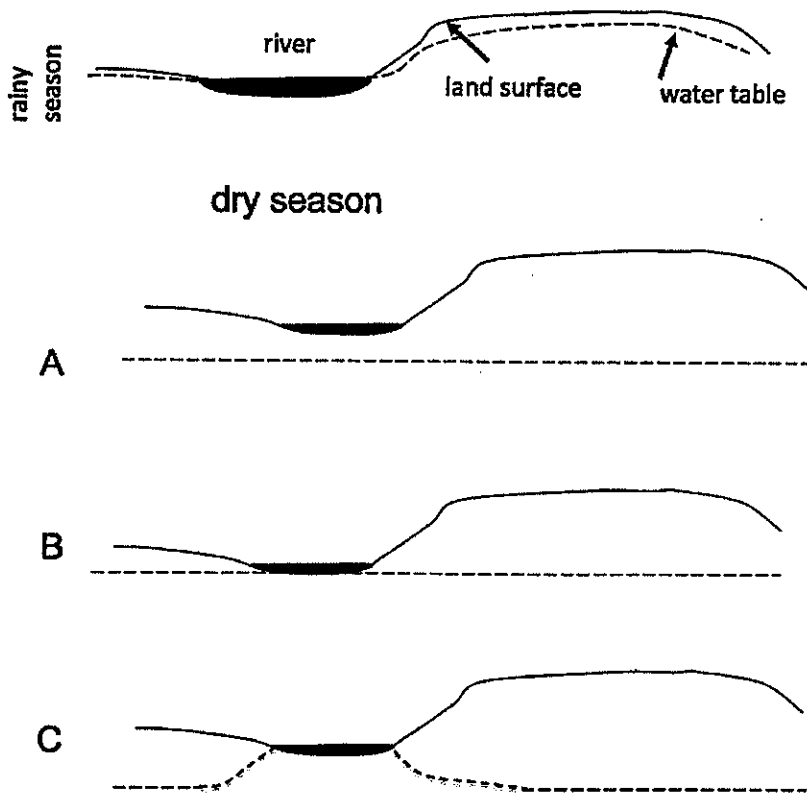
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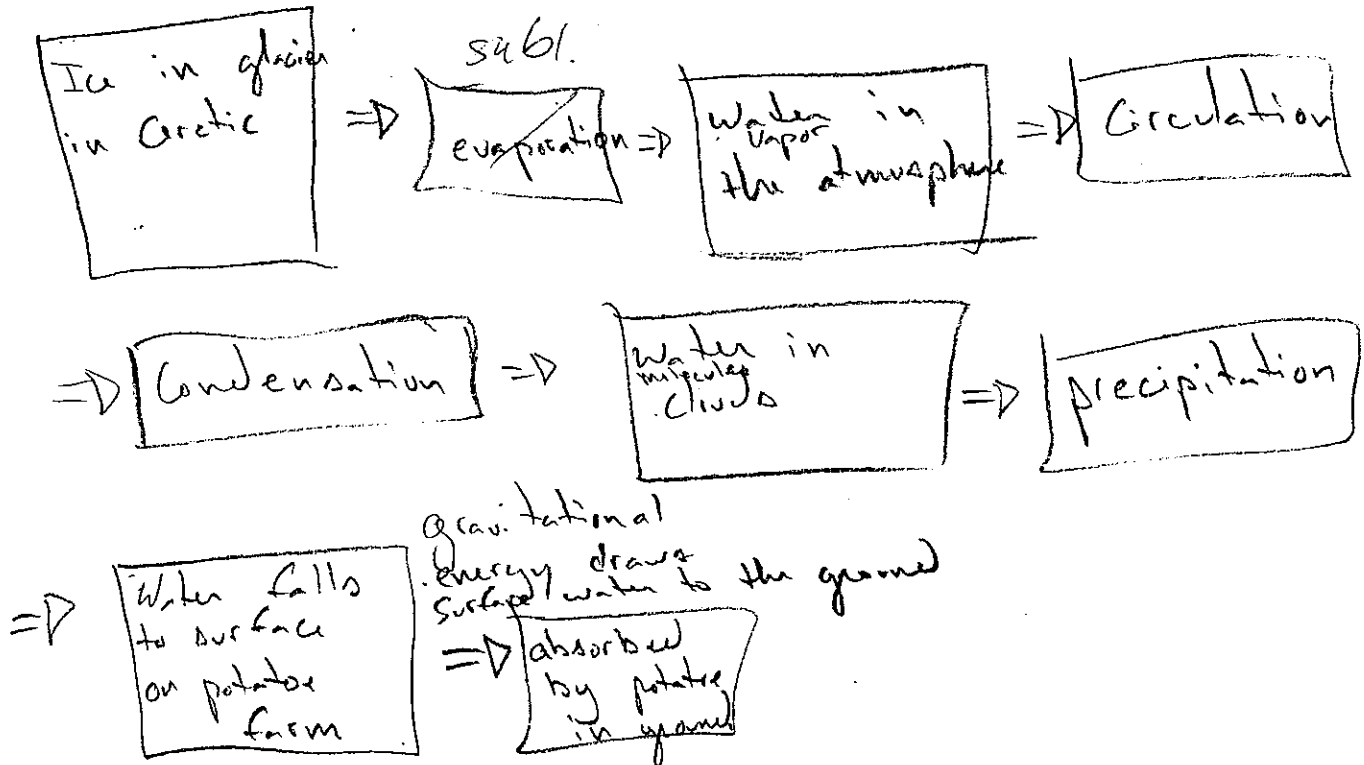
8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
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10. What happens when plants respire?
- a. Plants convert biomass into energy
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c. Plants release energy

SHORT ANSWER. 25 points each (50 points total)

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If there was more salt in the polar ice than in the surrounding water, thermohaline would happen at a slower rate of circulation. Since more salt would be used in the polar ice, there would be less salt in the ocean water than there is now. This would reduce buoyancy, making it harder/slower for molecules to reach the area near the surface before falling back to the deeper part of the oceans.

10

I think you have the idea but I don't really know/ can't tell from what you wrote.

EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

40 32

YOUR SCORE:

72

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

1

STUDENT ID #: A40678097; **GROUP #:** 28

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

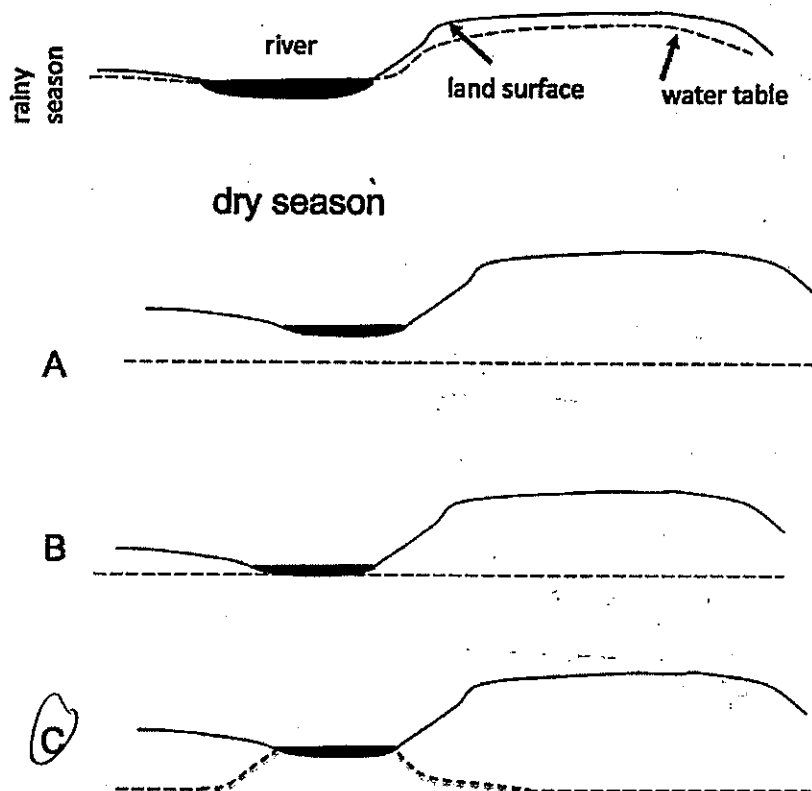
10

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- a. Plants convert biomass into energy
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A40678097

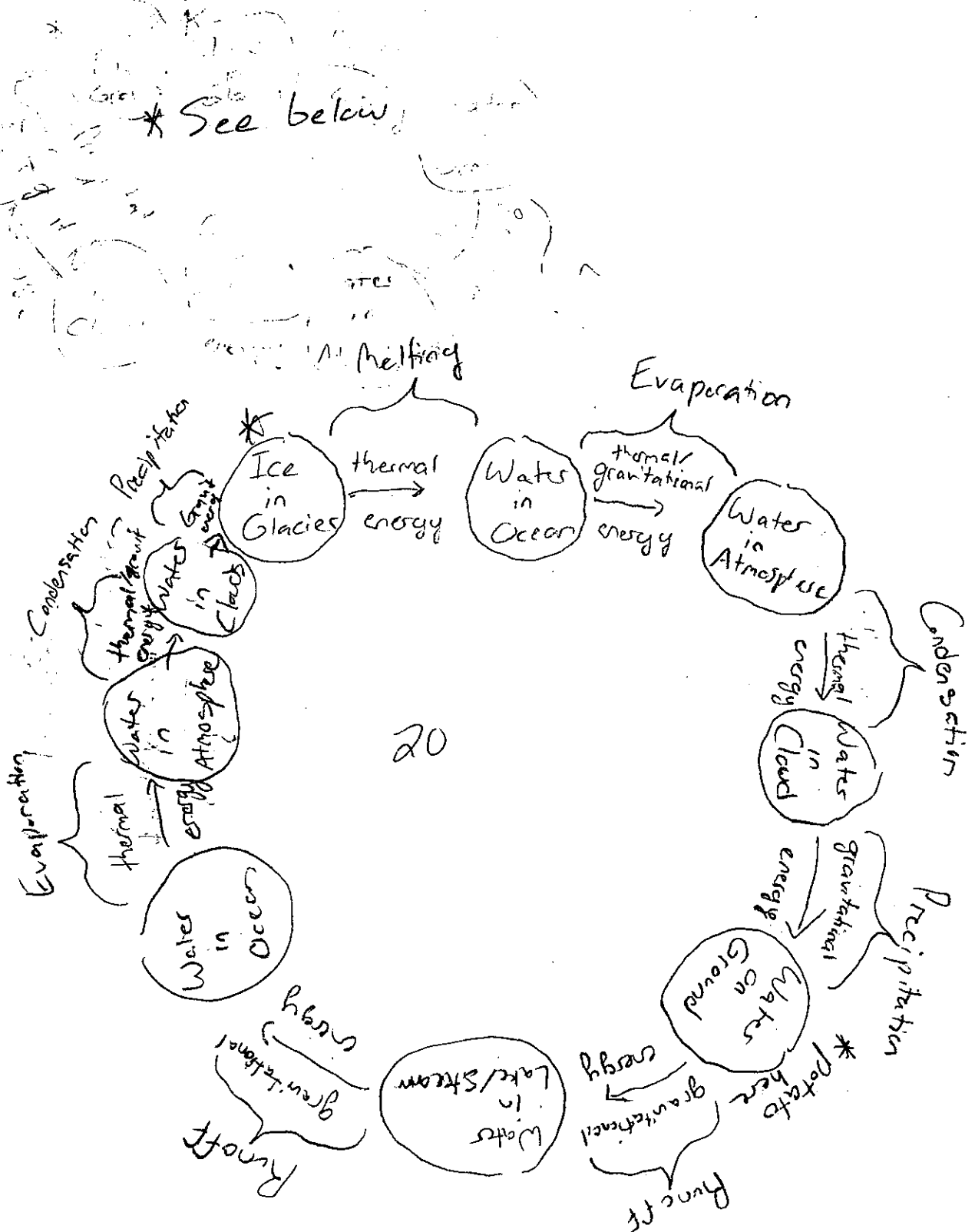
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

3

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

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15 A. Thermohaline circulation is due to density changes in the water which is caused by differences in salinity and temperature. Ice is typically less dense than water, but if it contained more salt, it would be more dense. Therefore, when this ice melts it would be more dense than the water around it so it would sink and there would be a greater amount of colder water where +?

B. Gravitational and thermal energy drive the movement ^{of} water, because more dense water sinks and colder water sinks, while warmer, less dense ^{NOT SO MUCH IN OCEAN} water rises. Chemical energy is also accounted for because the salinity of the water affects how dense it is.

EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

50 35

YOUR SCORE:

85

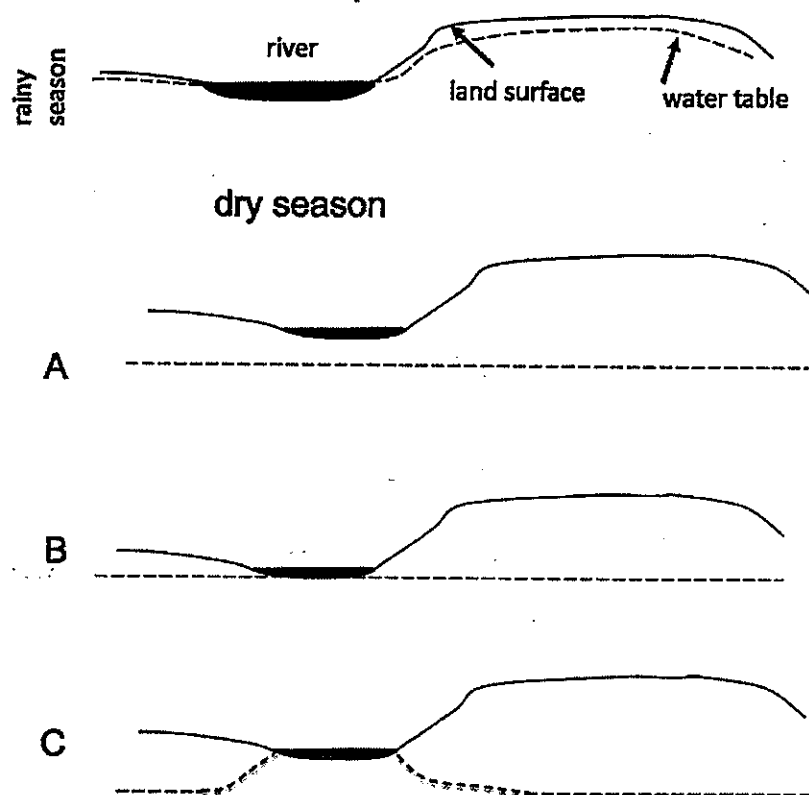
STUDENT ID #: A43836396; GROUP #: 28**MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.**

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 - a. Water molecules become larger
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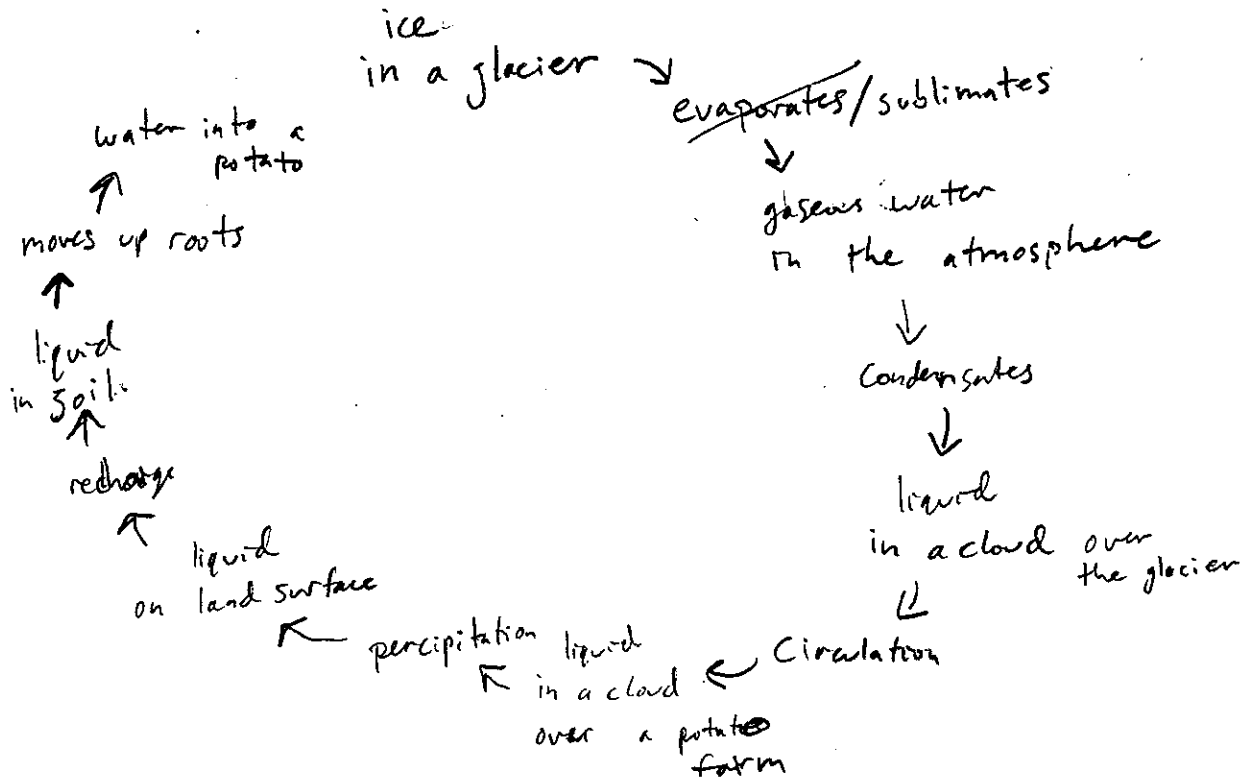
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The thermohaline circulation occurs, because warm water is less dense than cool water, therefore the warm water circulates on top of cool water that circulates under. Also, the salt water is more dense than fresh water. If the polar ice contained more salt than its surrounding seawater, it would warm up that ice and cause it to melt which would drastically raise sea levels world wide and it might cause water to be warmer closer to the poles. If the polar ice was full of more salt it would cause it to sink in with the rest of salt water in the sea. ^{since they have the same density now} All of this would cause the denser cooler water to be more world wide.

5

EXTRA CREDIT (2 points)

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30 30

YOUR SCORE:

60

STUDENT ID #: A 41836115; GROUP #: 28

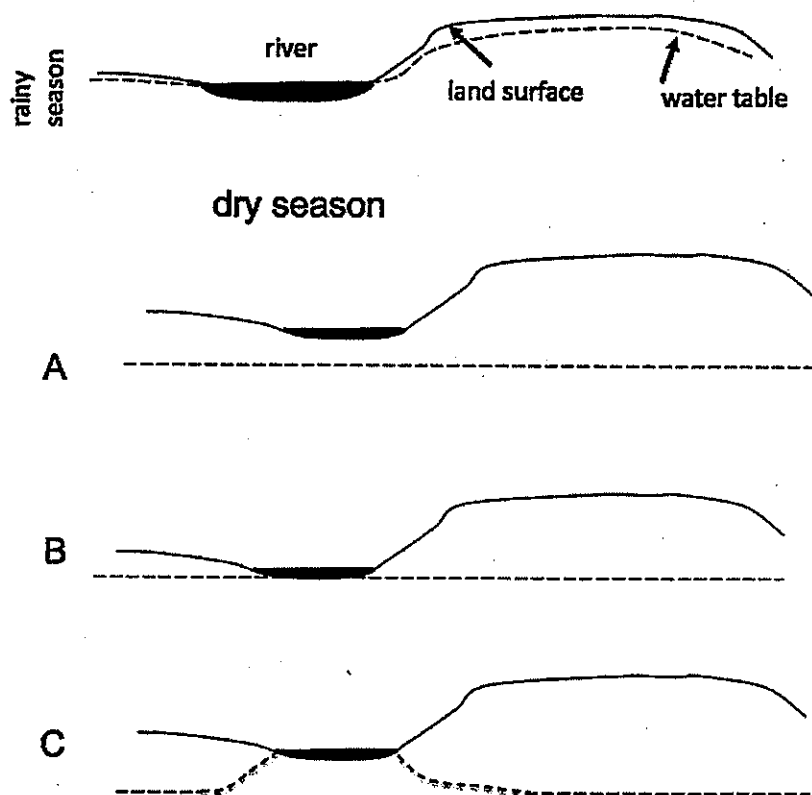
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c. A = gravitational, B= thermal, C= thermal
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8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
b. been less
c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
b. Plants convert energy into biomass
c. Plants release energy

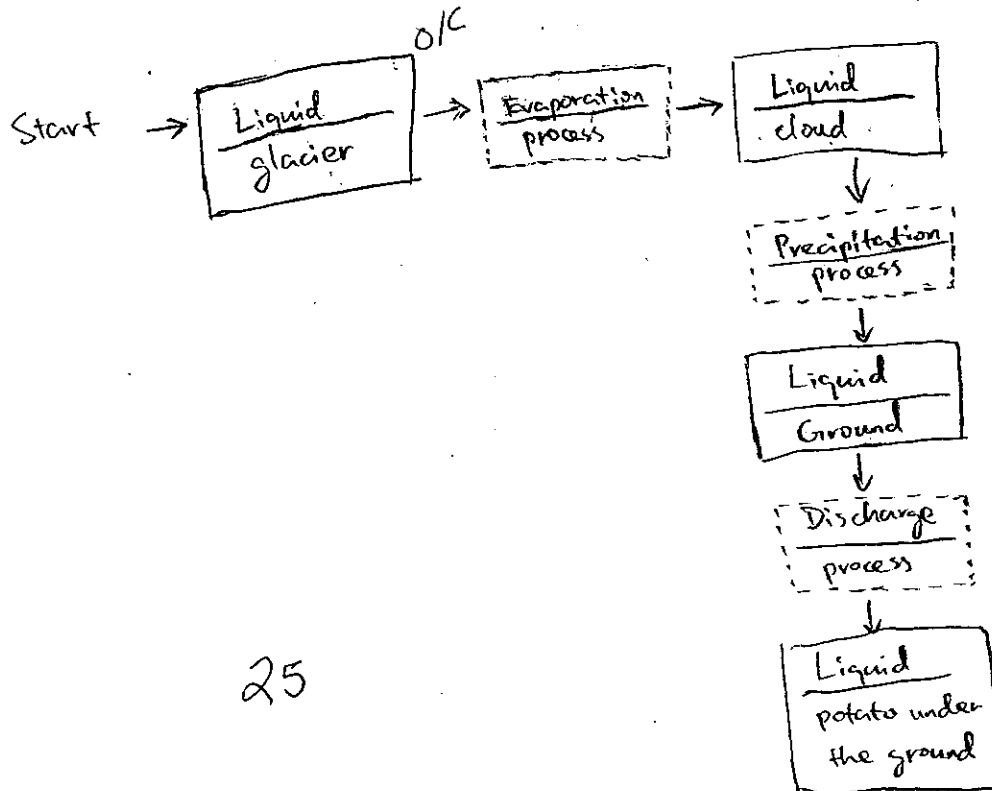
A4183618

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

3

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- Water phase at each step in the journey
 - A name for each process that moves or transforms water



2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

Circulation happens because of the difference of density between cold seawater and warm seawater. Colder seawater are on the bottom of the sea, and warm seawater on the top of it. When wind blows, the warm seawater flows faster than colder seawater, because of warm seawater is less dense than cold seawater, also, warm seawater transformed thermal energy when it flows. If polar ice contained more salt than the surrounding seawater from which it freezes, there are more warm water flows to South and North pole from equator.

EXTRA CREDIT (2 points)

- 2 EC. How are burning wood and respiration similar?
- They both destroy matter during energy conversion
 - They both convert thermal energy into gravitational energy
 - They both convert chemical energy into thermal energy
 - They both convert kinetic energy into potential energy.

30 37

YOUR SCORE:

67

STUDENT ID #: A4267246; GROUP #: 29

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

- 10
1. What happens when water molecules condense?
 - a. Water molecules become larger
 - b. Gaseous water becomes liquid water
 - c. Hydrogen and oxygen atoms combine to form liquid water
 - d. The temperature of water molecules decreases
 2. Which of the following is the largest freshwater reservoir
 - a. The atmosphere
 - b. Oceans
 - c. Glaciers
 - d. Lakes and streams
 3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
 - a. Rainfall and surface runoff into the lake
 - b. Seasonal high water from the Mississippi River
 - c. Ground water from beneath the surface
 4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
 - a. A= evaporation, B= deposition, C= sublimation
 - b. A = condensation, B= precipitation, C= evaporation
 - c. A= sublimation, B= precipitation, C= evaporation
 - d. A = precipitation, B= freezing, C= condensation
 5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
 - a. Liquid water from the pot condenses
 - b. Liquid water from the pot evaporates
 - c. Water vapor from the pot condenses
 - d. Water vapor from the pot evaporates
 6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
 - a. This is what one would predict with global warming
 - b. This is the opposite of what one would predict with global warming
 - c. Predictions about global warming do not address global precipitation.

A 42672148

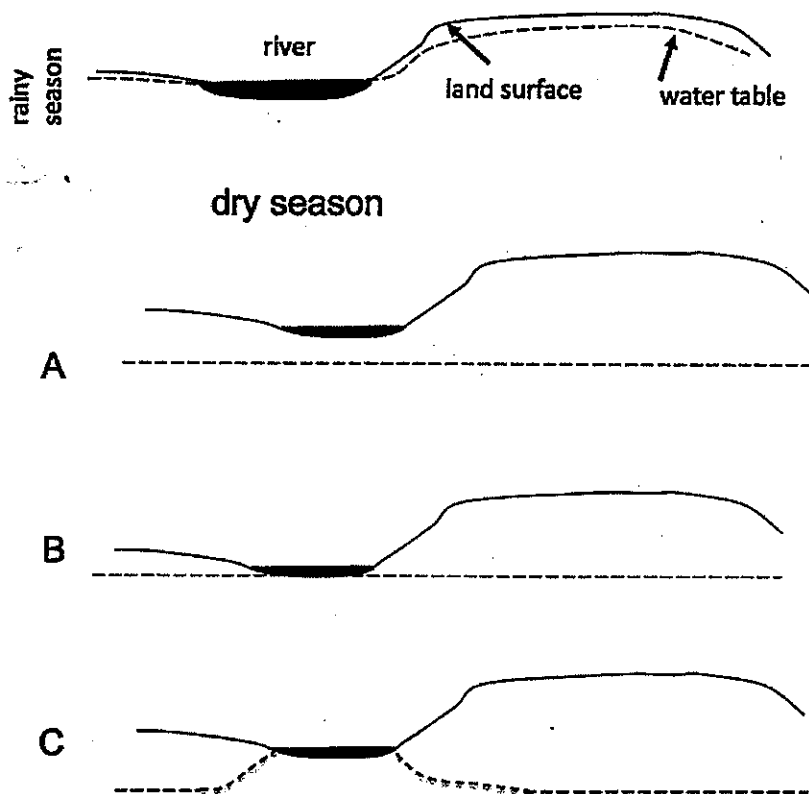
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

2

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



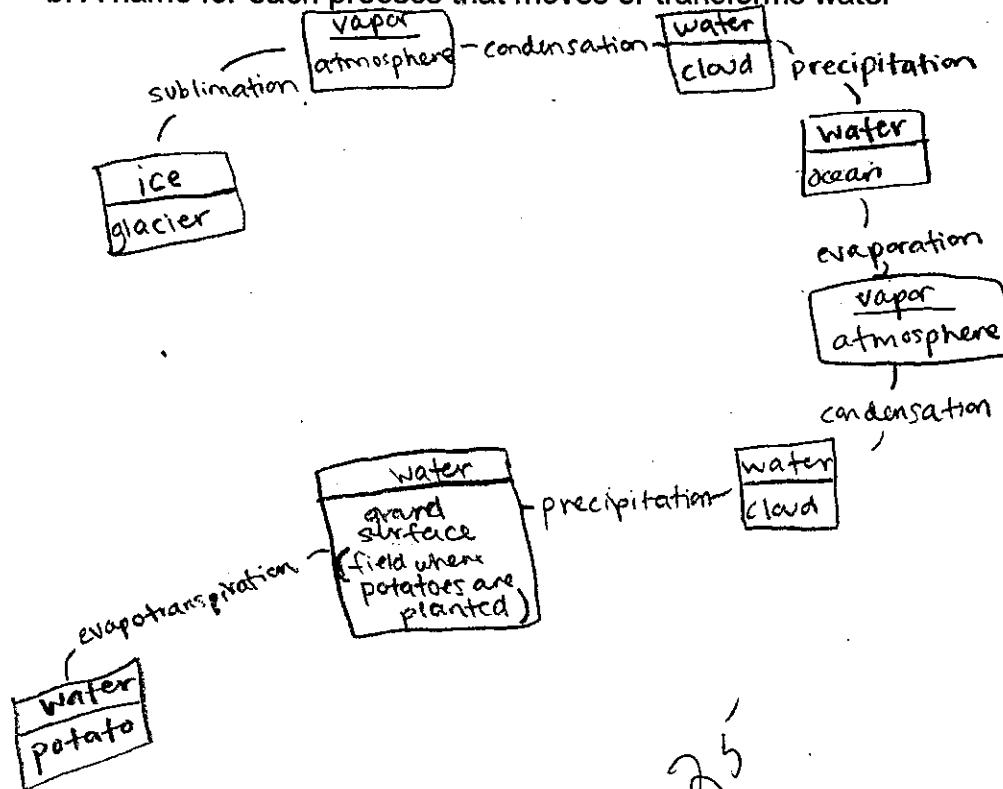
9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

A42672148

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water



25

A42672148

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

4

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

Freshwater is less dense than salt water so the salt water sinks to the bottom while fresh water floats. If polar ice contained more salt than surrounding seawater from which it freezes, thermohaline circulation would decrease. The polar ice could become more dense with the added salt than the surrounding water and sink. There would be more dense water floating in the ocean that would have to rise. The polar regions would have the warm air from the equator forming still, but they wouldn't have as much warm air to rise and circulate back to the equator. The water moves by gravitational energy, but when being evaporated it is by chemical and thermal energy.

19 graded
this
←

← almost
B
20

where? Circulation happens because warm air rises and wind circulates it to colder regions on the earth. Water is carried by gravitational energy, but when evaporating and changing form it is through thermal and chemical energy. If polar ice contained more salt than surrounding sea water I believe thermohaline circulation would decrease because the more dense salty water and ice would sink leaving less water available to evaporate and circulate to the colder regions.

EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

50 47

YOUR SCORE:

97



A 42515239

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

1

STUDENT ID #: A42515239; GROUP #: 29

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

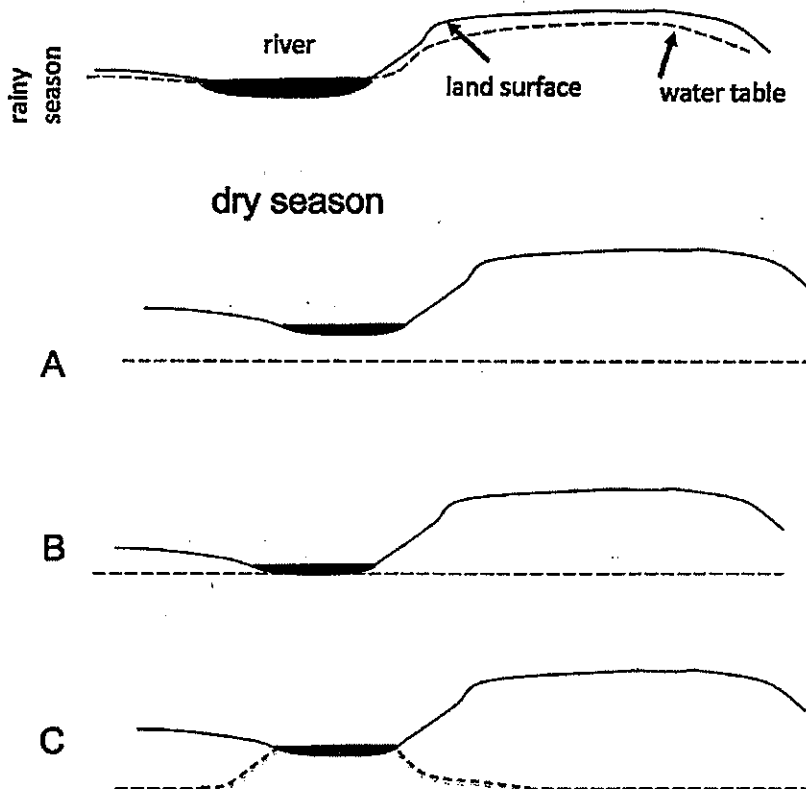
4

1. What happens when water molecules condense?
 - a. Water molecules become larger
 - b. Gaseous water becomes liquid water
 - c. Hydrogen and oxygen atoms combine to form liquid water
 - d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
 - a. The atmosphere
 - b. Oceans
 - c. Glaciers
 - d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
 - a. Rainfall and surface runoff into the lake
 - b. Seasonal high water from the Mississippi River
 - c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of ____A____, then becomes water in a glacier through the process of ____B____, and then becomes water in clouds through the process of ____C____.
 - a. A= evaporation, B= deposition, C= sublimation
 - b. A = condensation, B= precipitation, C= evaporation
 - c. A= sublimation, B= precipitation, C= evaporation
 - d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
 - a. Liquid water from the pot condenses
 - b. Liquid water from the pot evaporates
 - c. Water vapor from the pot condenses
 - d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
 - a. This is what one would predict with global warming
 - b. This is the opposite of what one would predict with global warming
 - c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

A42515239

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

3

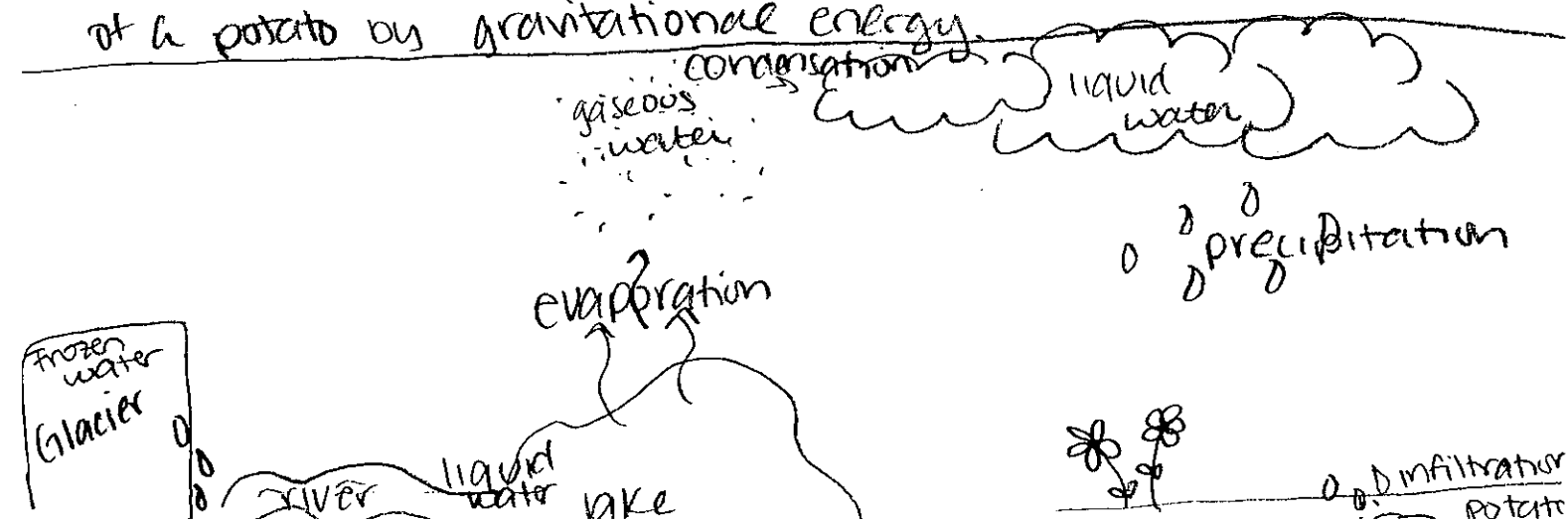
SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water

22

- 1) ^{ice} Water from glacier melts
- 2) This melted water is moved from name? the glacier into a river by gravitational energy
- 3) ^{liquid} Water from river is runoff into lake by gravitational energy.
- 4) ^{liquid} Water from lake evaporates into the atmosphere by thermal energy.
- 5) ^{gaseous} Water in atmosphere condenses into liquid water in clouds by thermal energy
- 6) Liquid water in clouds is precipitated onto the ground by gravitational energies
- 7) Liquid water on ground infiltrates land and becomes part of a potato by gravitational energy.



A42515239

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

4

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - The energy that is causing movement or transformation of water.

Circulation in oceans is a constant process. This water is always circulating because less dense, warmer water is rising and the more dense, cooler water is sinking. As the water begins to cool, this water sinks below, allowing the warmer water to rise.

> really
not happening
in oceans

If polar ice contained more salt than the surrounding seawater, this ice would be more dense, and not as much would be at the surface. This would result in more ice being submerged under the water, so more seawater would be cooling off, therefore lessening the amount of warmer water being able to rise, so the thermohaline circulation would slow down in these areas. \$ 10

EXTRA CREDIT (2 points)

- ~ EC. How are burning wood and respiration similar?
- They both destroy matter during energy conversion
 - They both convert thermal energy into gravitational energy
 - They both convert chemical energy into thermal energy
 - They both convert kinetic energy into potential energy.

20 34 4
YOUR SCORE:
54

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

1

STUDENT ID #: A43303247; GROUP #: 29 29

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?

7

- a. Water molecules become larger
- ☒ b. Gaseous water becomes liquid water
- c. Hydrogen and oxygen atoms combine to form liquid water
- d. The temperature of water molecules decreases

2. Which of the following is the largest freshwater reservoir

- a. The atmosphere
- b. Oceans
- ☒ c. Glaciers
- d. Lakes and streams

3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?

- ☒ a. Rainfall and surface runoff into the lake
- b. Seasonal high water from the Mississippi River
- c. Ground water from beneath the surface

4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A condensation, then becomes water in a glacier through the process of B precip, and then becomes water in clouds through the process of evapo C cond.

- a. A= evaporation, B= deposition, C= sublimation
- ☒ b. A = condensation, B= precipitation, C= evaporation
- c. A= sublimation, B= precipitation, C= evaporation
- d. A = precipitation, B= freezing, C= condensation

5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?

- ☒ a. Liquid water from the pot condenses
- b. Liquid water from the pot evaporates
- c. Water vapor from the pot condenses
- d. Water vapor from the pot evaporates

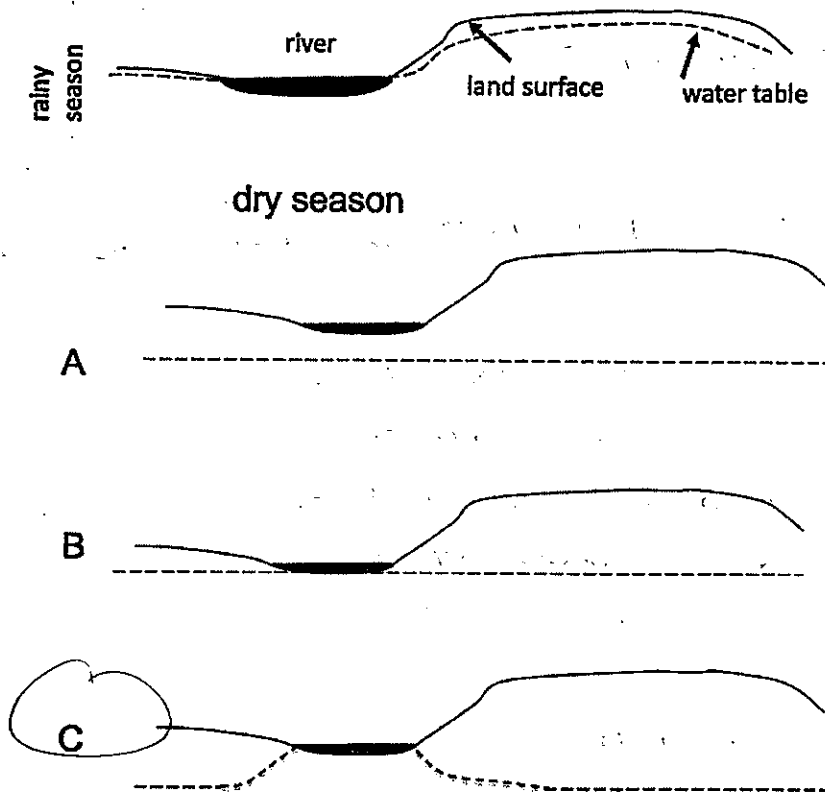
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?

- a. This is what one would predict with global warming
- b. This is the opposite of what one would predict with global warming
- ☒ c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of gravA energy. Water in the atmosphere becomes water in clouds as a result of thermalB energy. Water in clouds becomes water in the atmosphere as the result of thermalC energy.

- a. A= chemical, B= thermal, C= thermal
 b. A= gravitational, B= gravitational, C= thermal
 c. A= gravitational, B= thermal, C= thermal
 d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:

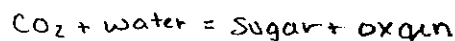
- a. been greater
 b. been less
 c. remained the same

$$\text{ice} = 0.9 \text{ g/cc} \quad \text{liquid} = 1.0 \text{ g/cc}$$

$$\frac{\text{water}}{\text{ice}}$$

10. What happens when plants respire?

- a. Plants convert biomass into energy
 b. Plants convert energy into biomass
 c. Plants release energy



potential released

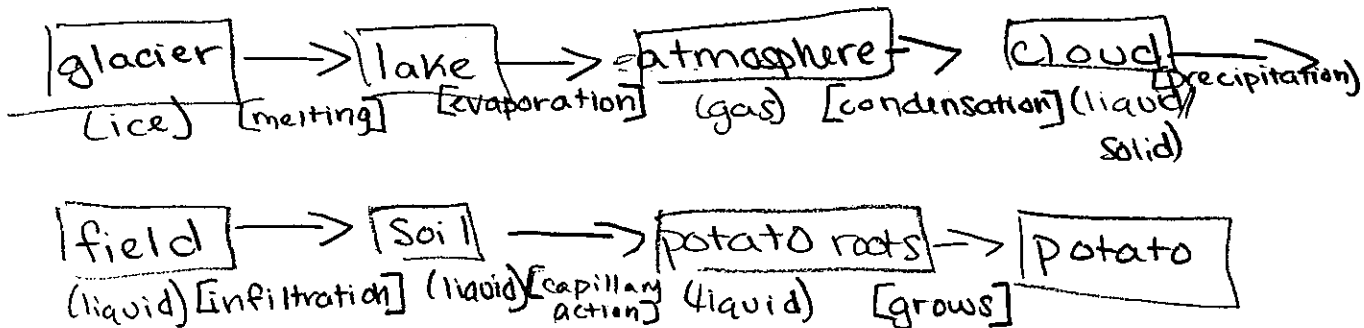
143303247

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

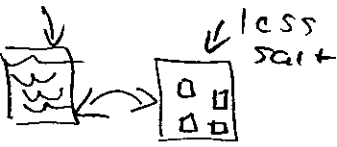
- a. Water phase at each step in the journey
- b. A name for each process that moves or transforms water

glacier → potato



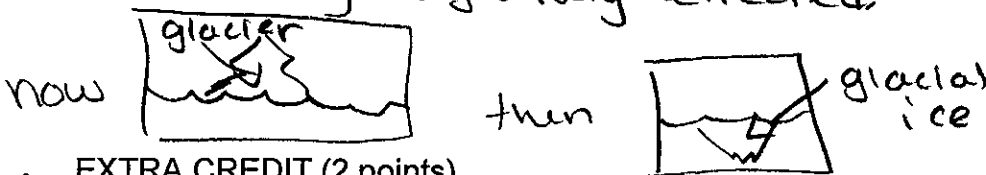
25

The water begins as ice (water in frozen state) and then melts due to an increase in thermal energy. Assuming the glacier is floating in a body of water, for example a lake, the solid ice would then melt into a liquid in the lake. Next the water evaporates due to more thermal energy and is converted into a gas in the atmosphere. From here, it condenses into a cloud which can be either in the liquid or solid state. Next due to gravitational energy the water will fall to earth through precipitation. At this point the water is liquid and has precipitated onto a potato field. The liquid water enters the soil through infiltration again due to gravity. The roots of the potato suck up the water as potatoes require much water from the soil in order to grow. The liquid water then remains in the potato awaiting the harvest.



2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
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Thermohaline circulation depends on deep icy waters, It is driven by wind and ocean currents as well as the natural patterns of water. In order for the water to become icy a decrease in thermal energy must occur. Gravitational energy plays a large part in replenished ocean water lost to natural processes such as evaporation. Unlike the atmosphere, sea water is warmest near earth's surface and coldest ^{at the ocean bottom} ~~near the core~~. Water is an anomaly as ice is less dense than liquid water (floats). Sea water becomes more dense and ~~so~~ also colder the further down. If polar ice contained more salt it would become more dense than the liquid water and therefore would no longer float. The ice would sink and the organisms living in the ocean depths would be very negatively effected.



EXTRA CREDIT (2 points)

- EC. How are burning wood and respiration similar?
- They both destroy matter during energy conversion
 - They both convert thermal energy into gravitational energy
 - ☒ They both convert chemical energy into thermal energy
 - They both convert kinetic energy into potential energy.

35 37

YOUR SCORE:

72

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

1

STUDENT ID #: 139112932; GROUP #: 27 29

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?

8

- a. Water molecules become larger
- ☒ b. Gaseous water becomes liquid water
- c. Hydrogen and oxygen atoms combine to form liquid water
- d. The temperature of water molecules decreases

2. Which of the following is the largest freshwater reservoir

- a. The atmosphere
- b. Oceans
- c. Glaciers
- ☒ d. Lakes and streams

3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?

- a. Rainfall and surface runoff into the lake
- b. Seasonal high water from the Mississippi River
- ☒ c. Ground water from beneath the surface

4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of _____ A _____, then becomes water in a glacier through the process of _____ B _____, and then becomes water in clouds through the process of _____ C _____.

- ~~a. A= evaporation, B= deposition, C= sublimation~~
- ☒ b. A = condensation, B= precipitation, C= evaporation
- ~~c. A= sublimation, B= precipitation, C= evaporation~~
- ~~d. A = precipitation, B= freezing, C= condensation~~

5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?

- a. Liquid water from the pot condenses
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- d. Water vapor from the pot evaporates

6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?

- ☒ a. This is what one would predict with global warming
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A39112932

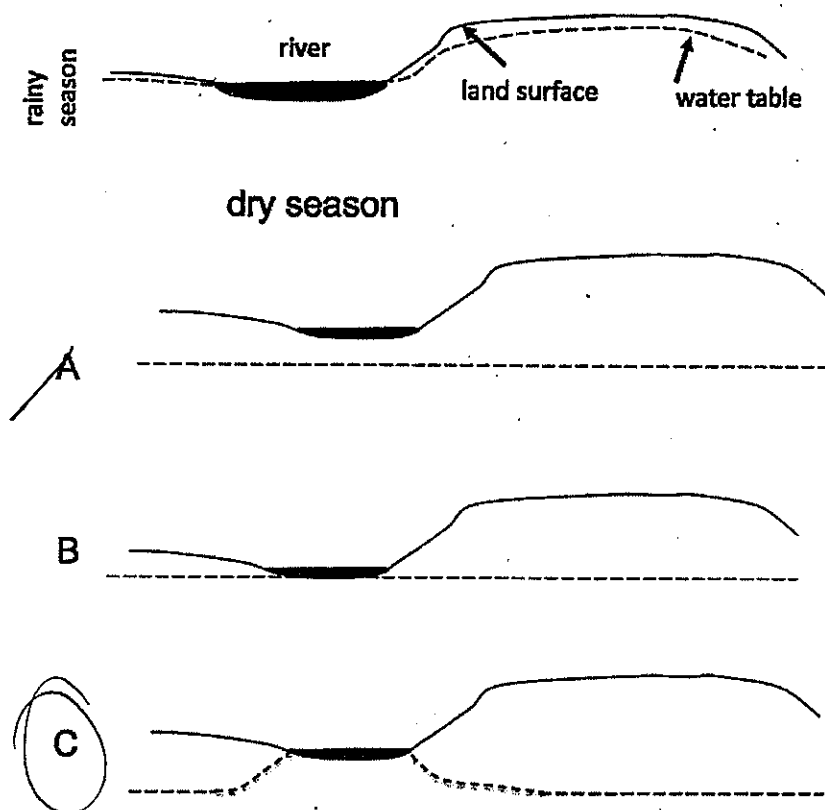
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

2

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- ☐ a. A= chemical, B= thermal, C= thermal
- ☐ b. A = gravitational, B= gravitational, C= thermal
- ☒ c. A = gravitational, B= thermal, C= thermal
- ☐ d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- ☐ a. been greater
 - ☒ b. been less
 - ☐ c. remained the same
10. What happens when plants respire?
- ☐ a. Plants convert biomass into energy
 - ☐ b. Plants convert energy into biomass
 - ☒ c. Plants release energy

A39112932

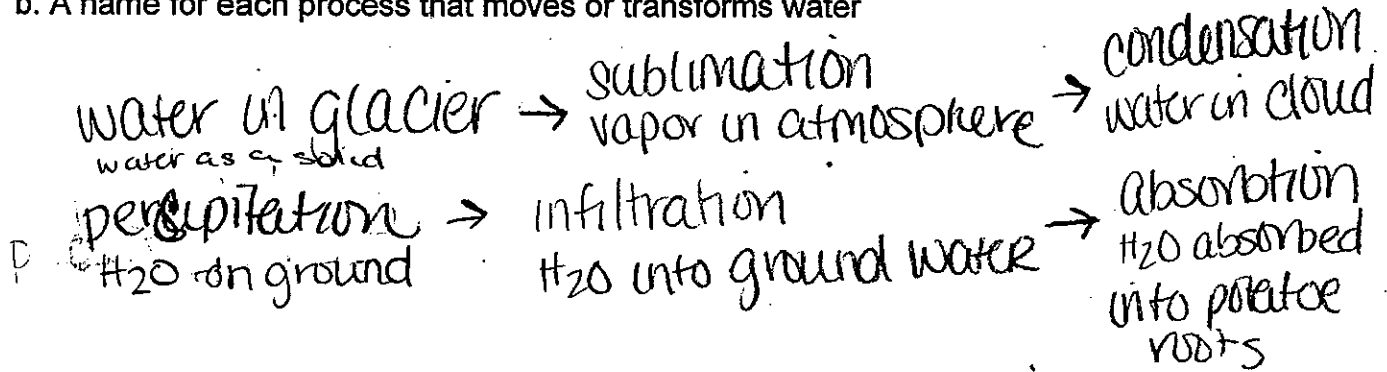
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

3

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
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25

A39112932

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

4

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

Doesn't happen!
by thermal energy
During thermohaline circulation the density of salt content in polar regions is greater because the temperature of the water is colder causing the molecules to be moving slower. Because the molecules are moving slower more salt is trapped in the ice when it freezes. The reason the water is colder is atmospheric circulation forcing warm air to rise because it is less dense than the cold air which gets pushed to the polar regions of the atmosphere causing temperature changes.

25

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- ☒ They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

40 32

YOUR SCORE:

72

STUDENT ID #: ~~Michael S. Libarkin~~; GROUP #: 3044266728

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 6
- Water molecules become larger
 - ☒ Gaseous water becomes liquid water
 - Hydrogen and oxygen atoms combine to form liquid water
 - The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
- The atmosphere
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- A= evaporation, B= deposition, C= sublimation
 - ☒ A = condensation, B= precipitation, C= evaporation
 - A= sublimation, B= precipitation, C= evaporation
 - A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
- Liquid water from the pot condenses
 - Liquid water from the pot evaporates
 - Water vapor from the pot condenses
 - ☒ Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
- ☒ This is what one would predict with global warming
 - This is the opposite of what one would predict with global warming
 - Predictions about global warming do not address global precipitation.

A 44266728

ISP 203A: GLOBAL CHANGE

EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

2

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

a. A= chemical, B= thermal, C= thermal

b. A = gravitational, B= gravitational, C= thermal

c. A = gravitational, B= thermal, C= thermal

d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



dry season

A

B

C

9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:

a. been greater

b. been less

c. remained the same

10. What happens when plants respire?

a. Plants convert biomass into energy

b. Plants convert energy into biomass

c. Plants release energy

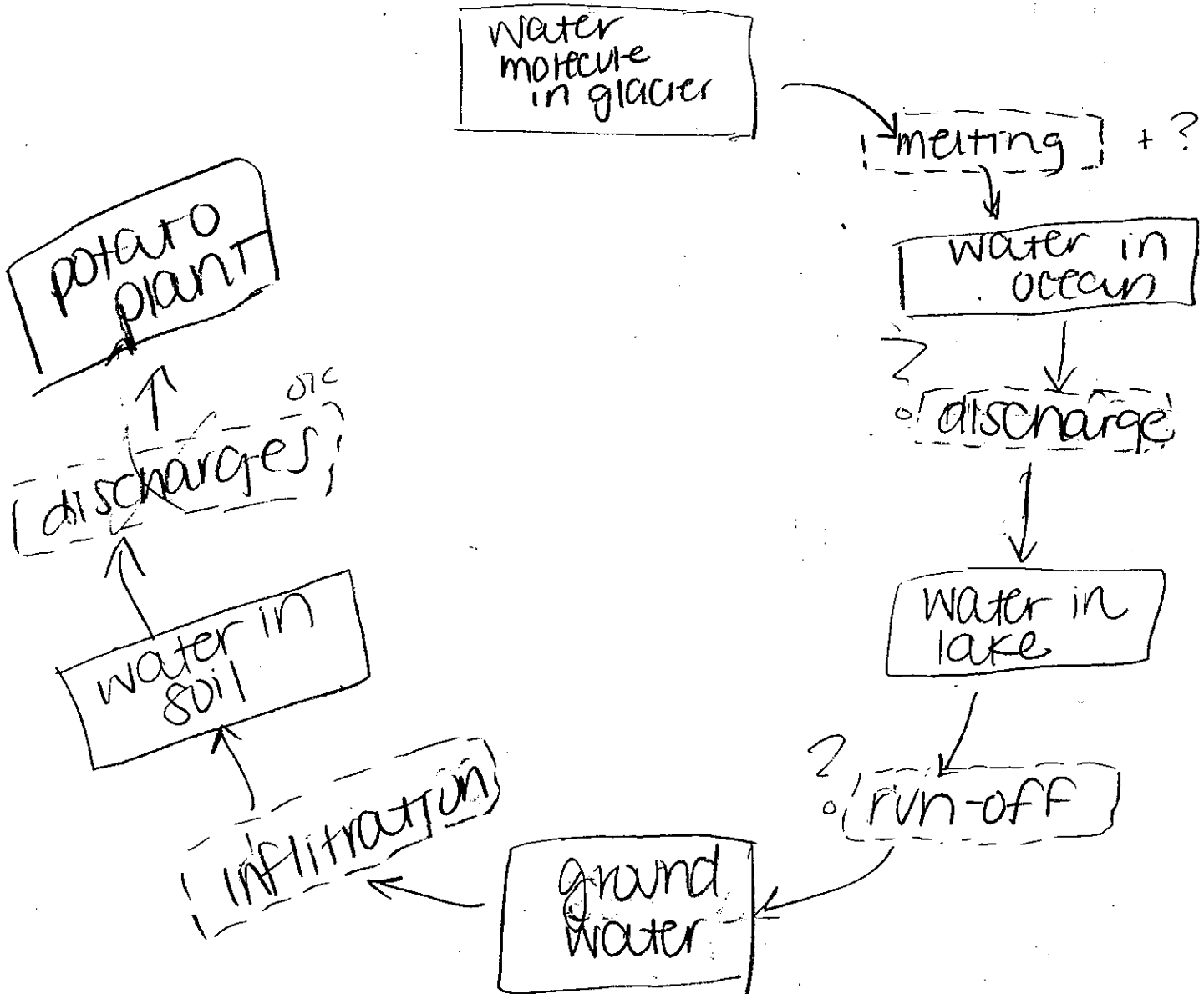
4426728

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

3

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- Water phase at each step in the journey
 - A name for each process that moves or transforms water



A44266728

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

4

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

In the haline circulation freshwater lies above the salt water because it is less dense. Therefore, if polar ice contained more salt than the surrounding seawater all the ice would sink to the bottom instead of floating. And as the air circulation moves the precipitation that will fall is freshwater allowing it to stay on top of the salty ice.

10

10

- 2 EXTRA CREDIT (2 points)
- EC. How are burning wood and respiration similar?
- They both destroy matter during energy conversion
 - They both convert thermal energy into gravitational energy
 - They both convert chemical energy into thermal energy
 - They both convert kinetic energy into potential energy.

30 27

YOUR SCORE:

57

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

1

STUDENT ID #: A41387501; GROUP #: 30

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 8
- ☒ a. Water molecules become larger
 - b. Gaseous water becomes liquid water
 - ~~c.~~ Hydrogen and oxygen atoms combine to form liquid water
 - d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
- a. The atmosphere
 - b. Oceans
 - ☒ c. Glaciers
 - d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
- a. Rainfall and surface runoff into the lake
 - b. Seasonal high water from the Mississippi River
 - ☒ c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of ____A____, then becomes water in a glacier through the process of ____B____, and then becomes water in clouds through the process of ____C____.
- ~~a.~~ A= evaporation, B= deposition, C= sublimation
 - ☒ b. A = condensation, B= precipitation, C= evaporation
 - ~~c.~~ A= sublimation, B= precipitation, C= evaporation
 - ~~d.~~ A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
- a. Liquid water from the pot condenses
 - b. Liquid water from the pot evaporates
 - ☒ c. Water vapor from the pot condenses
 - d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
- ☒ a. This is what one would predict with global warming
 - b. This is the opposite of what one would predict with global warming
 - c. Predictions about global warming do not address global precipitation.

A41387561

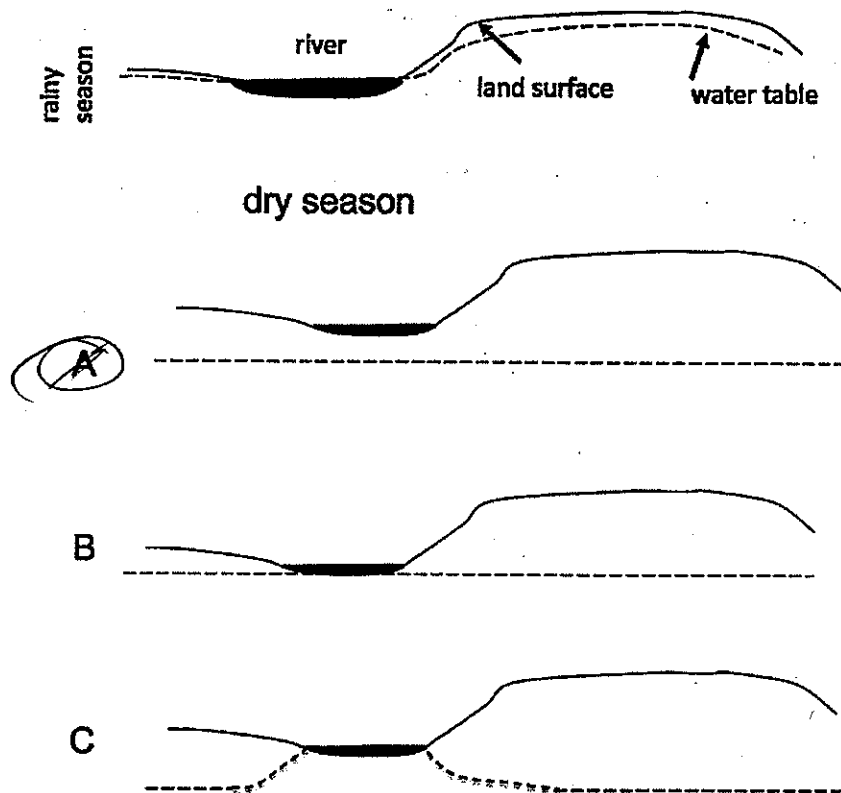
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

2

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A = chemical, B = thermal, C = thermal
b. A = gravitational, B = gravitational, C = thermal
c. A = gravitational, B = thermal, C = thermal
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8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?

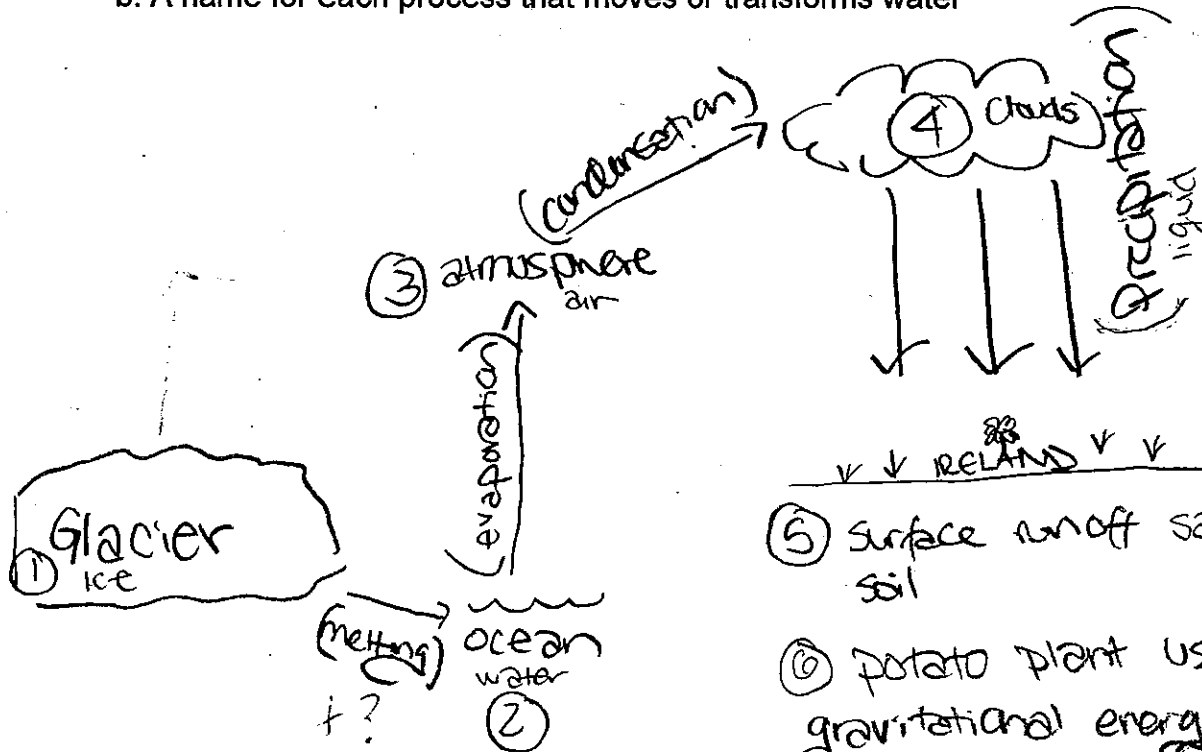


9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
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- a. Plants convert biomass into energy
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SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

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when ice forms it leaves salt behind in the water.
 if salt - formed ice with the water:
 there would be less salt in the water near glaciers^s
 thus ~~the water~~ would be less dense. less dense water
 wouldn't sink to the bottom (using ^{less} gravitational energy)
 therefore will be ^{more} warmed by the sun (thermal energy)
 AND how would circ. change?

5

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- ☒ They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

40 26

YOUR SCORE:

66

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

1

STUDENT ID #: A42894705 ; **GROUP #:** 30

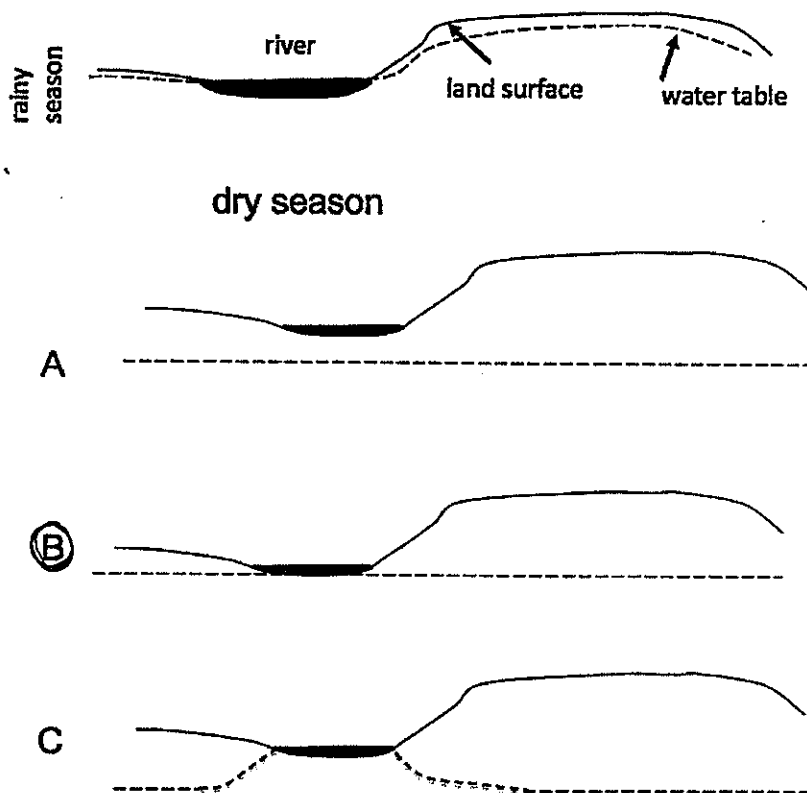
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?
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Ⓒ A = gravitational, B= thermal, C= thermal
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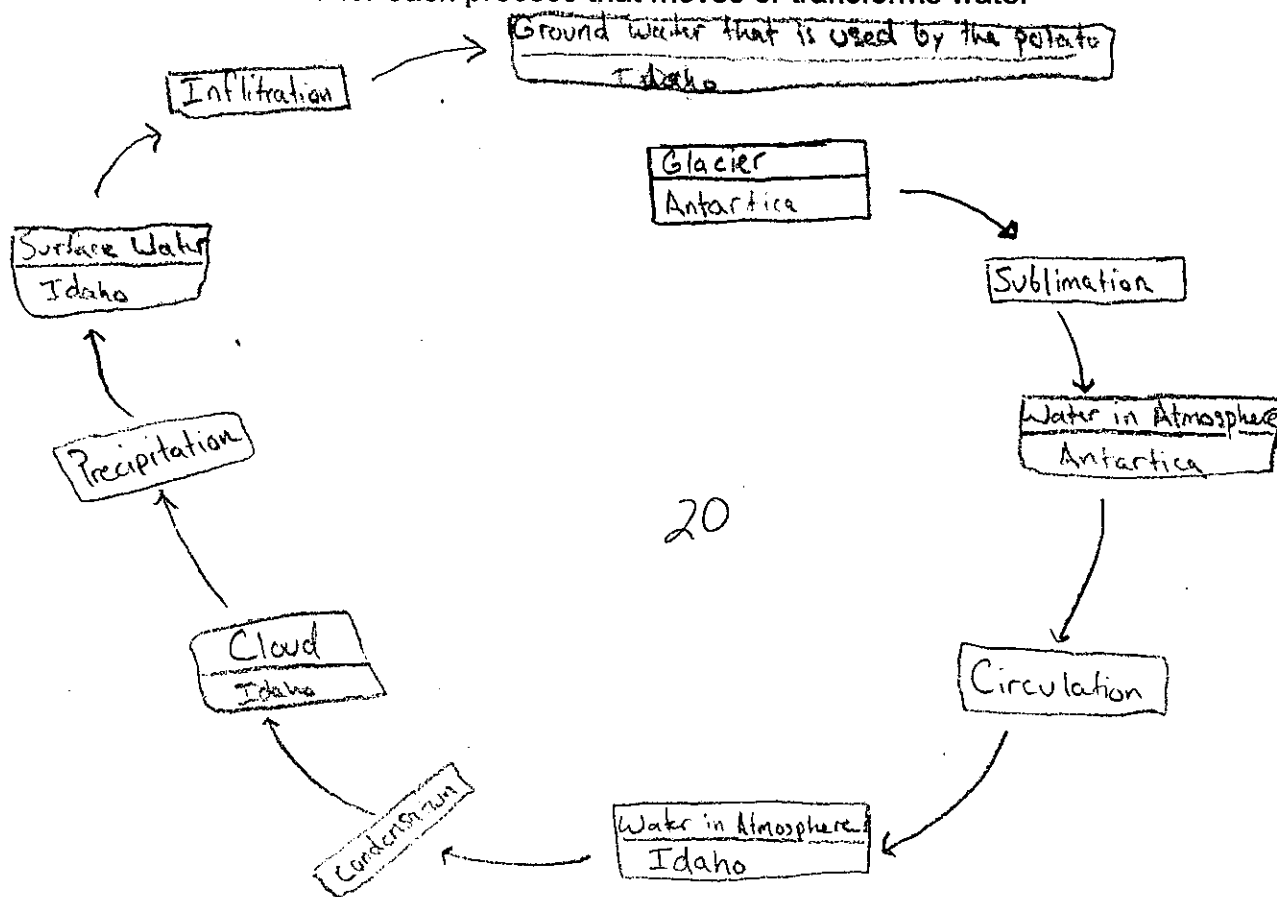


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1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

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- A name for each process that moves or transforms water



Sorry about the terrible Cycle drawing.

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Thermohaline circulation occurs because ~~a heat~~ vents at the bottom of the ocean. The water heats up causing the water molecules to be less dense than colder water and the warm water rises. As the warm water rises it becomes cooler (more dense) then falls back down to the ocean surface because gravitational energy; pulls the denser water down.

I think there would be an increase in thermohaline circulation because more salt on the polar ice caps is going to cause the ocean water to become more dense when polar ice melts. This will make gravitational energy pull the more dense water to the bottom at a faster rate than the previous less dense water.

EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

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- They both convert kinetic energy into potential energy.

40 30

YOUR SCORE:

70